METHODS

IN

EDUCATION

THOMAS J. McEVOY

Class LB1025

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METHODS IN EDUCATION

BY

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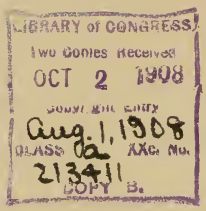

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THOMAS J. McEVOY

PREFACE.

Usage puts a preface in every text-book and so you find one here. But the measure of value is in the body of the text, not in the preface. The gateway is not a true criterion of the fruits in the field.

The books on school methods can be easily classified. Some rest upon the abstract theories of psychology, exalting rigid formality; some present mere outlines in logical forms, leaving the student to find and adapt the subject-matter; others elaborate particular methods suited to the respective subjects of instruction. All these are good, but still the young student wavers beneath the uncertainty of knowing exactly what to do. Hence, this book is prepared to satisfy the actual needs of teachers.

The principles of education followed here are justified by psychology; the subject-matter is taken from daily work in the class-room; the difficulties explained are from the recorded experience of teachers; and the paramount needs to be satisfied are the needs of the child. Many lessons are complete in themselves so that they may be used in teaching or on examination. These complete lessons are types which any teacher may safely follow. Other lessons give fully the facts to be presented but the details of method are left to the teacher. The scope of the matter does not cover the universe; use has determined the limits.

Every topic in this book is the cumulative result of contributions from pupils, students and teachers with whom I have worked. Books, too, have done their share, but responses from human activity are a better inspiration. I hope Methods in Education will give to other boys and girls what my friends have given to me.

T. J. M.

306 Fulton Street, Brooklyn, September, 1908.

Contents.

Chapter I. Introduction.

SECTION

1. The purpose of education
2. Scope of this treatise
3. Scope of methods in education
4. Meaning of pedagogics
5. Science of education
6. History of education

Chapter II. The Curriculum.

7. The teacher and the course of study
8. Principles determining course of study
9. Butler on studies
10. Former courses of study
11. Contrast of courses of study
12. Enriching the course of study
13. The culture epoch theory in relation to courses of study
14. Correlation of studies
15. Report of the Committee of Fifteen on correlation of studies
16. Concentration of studies
17. Co-ordination of studies
18. Correlation, concentration and co-ordination distinguished

Chapter III. Definitions in Psychology.

19. Limitations
20. Consciousness
21. Mind
22. Knowing
23. Feeling
24. Willing
25. Will
26. Faculties
27. Object, action, product of a faculty
28. Attention
29. Interest
30. Apperception
31. Sensation
32. Sense-perception
33. Observation
34. Memory: storing concepts
35. Imagination: building concepts
36. Conception: holding concepts
37. Concept
38. Judgment: connecting concepts
39. Reasoning: deriving concepts
40. Self-activity
41. Habit

Chapter IV. Methods in Mind Training.

42. The plan simplified
43. The plan outlined.
44. The plan explained
45. Physical basis of mind
46. Reaction in psychology
47. Diagram for reaction
48. Summary
49. The relation of psychical elements
50. The training of the will
51. Characteristics of a weak will
52. Characteristics of a stubborn will
53. Characteristics of strength of will
54. Practical effects
55. Causes of weak will
56. Causes of strength of will
57. Cultivation of will power: preliminary processes
58. Cultivation of will power: actual processes
59. Negative action and cultivating the will

Chapter V. School Economy.

SECTION
60. Meaning
61. Space
62. Light
63. Heat
64. Ventilation
65. Seating
66. Decoration
67. Grounds

Chapter VI. School Management.

68. Principles
69. Qualifications of teachers
70. Program
71. Opening exercises
72. Grading
73. Promotion
74. Class teaching
75. Group teaching
76. Individual teaching
77. Batavia plan
78. Examinations
79. Reviews
80. Home lessons
81. Questioning
82. Answers
83. Moral education
84. Personality of teacher
85. Reverence
86. Self-respect
87. Principle in character
88. Spirit of school
89. Social membership
90. Self-government
91. Moral values of studies
92. Contemporary civilization
93. Topics for moral lessons
94. Principles of moral instruction
95. Discipline
96. Authority
97. Co-operation of parents
98. Punishment defined
99. Kinds of punishment
100. Incentives
101. Self-government of pupils
102. Public opinion in school
103. Evils
104. Virtues
105. Affiliated interests
106. Adolescence
107. Fatigue
108. Devices in management

Chapter VII. Methods of Teaching.

109. Definition
110. Classification
111. Conversational method
I. From viewpoint of teacher
112. Development method
113. Lecture method
114. Questioning method
115. Socratic method
116. Illustration of Socratic questioning in grammar
117. Illustration in mathematics
118. From the particular to the general
II. From viewpoint of pupil
119. Simple to complex
120. Concrete to abstract
121. From the known to the related unknown
122. Observation before reasoning; processes before rules; facts before definitions or principles
123. From the empirical to the rational
124. Heuristic method
125. Prussian method
126. Inductive method
127. Deductive method
128. The inductive-deductive method
129. Analytic method
III. From viewpoint of subject-matter
130. Synthetic method
131. Comparison of analysis and synthesis
132. Topical method
133. Text-book method

Chapter VIII. General Method.

SECTION
134. Device, method, general method
135. Order of the mind
136. Apperception aided
137. Aim
138. Rein on aim
139. Preparation
140. Presentation
141. Comparison or association
142. Generalization
143. Application or drill
144. Dr. Hervey on formal steps of instruction
145. Dr. Hervey's conclusion
146 Illustrations
147. Illustration in grammar grade reading
148. Illustrative lesson on attribute complement
149. Method-whole

Chapter IX. Spelling.

150. Accuracy a worthy aim
151. Psychology of spelling
152. The problem
153. Difficulties in subject-matter
154. Difficulties in the pupils
155. Defective teaching; ten mistakes
156. What words shall pupils spell?
157. Argument for text-book
158. In favor of selected lists of words
159. Combination of book and lists
160. Methods
161. Advantages of oral spelling
162. Disadvantages of oral spelling
163. Advantages of written spelling
164. Disadvantages of written spelling
165. Directions for studying a spelling lesson in class
166. How to learn a spelling lesson; eleven ways
167. Suggestions to the teacher
168. Rules for spelling
169. Classification of words
170. How to teach synonyms
171. How to teach homophones
172. How to teach homonyms
173. How to teach the meaning of words
174. How pupils may show their knowledge of the meaning of words
175. Means of learning pronunciation
176. Uses of the dictionary
177. Exercises in word-building
178. Correlation through dictation
179. "Make every lesson a spelling lesson"
180. Pronunciation of each syllable
181. Repetition in writing misspelled words
182. Co-operation of pupils
183. Grouping words by comparison
184. Grouping words by contrast
185. Variety in the recitation and reasons therefor; ten ways.

Chapter X. Composition.

186. Utility and culture
187. General aims
188. The pupils' motives: pleasure, spontaneity, interest
189. Principles determining selection of matter for compositions
190. Kinds of composition exercises
191. Oral composition
192. In primary grades
193. Dr. Maxwell on oral composition
194. Kinds of written exercises
195. Dictation
196. Forms of expression
197. Reproduction
198. Paraphrase
199. Abstract

SECTION
200. Elaboration
201. Kinds of written composition
202. Problems
203. Selection of subjects
204. Some suitable subjects
205. The model as a preparation for writing
206. The selection of a model
207. The study of the model
208. Imitation of the model
209. The model in criticism
210. Outlines
211. Composition without model
212. Criticism of compositions
213. Suggestions on criticism
214. Structural errors.
215. Pertinent questions answered

Chapter XI. Grammar.

216. Value of technical grammar.
217. Scope of this chapter
218. A habit of thinking
219. Facts before conclusions
220. The syllogism
221. Fundamental facts in grammar
222. Development based upon fundamental facts
223. Oral analysis
224. Diagrams
225. Drill
226. Parsing literary masterpieces
227. False syntax
228. Types
229. Parts of speech
230. Predicate adjective and adverb modifiers distinguished
231. Personal pronoun and relative pronoun
232. Shall and will, should and would
233. Modes
234. Participles and infinitives
235. Participle
236. Uses of participles
237. Distinctions required
238. Drill on participle used as adjective; verbal, or verbal adjective
239. Drill on participles used as nouns; gerunds, or verbal nouns
240. Drill on participle used as a mere adjective
241. Drill on participle used as a mere noun.
242. Uses of infinitives
243. Drill on infinitives used as nouns
244. Drill on infinitives used as adjectives
245. Drill on infinitives used as adverbs
246. The infinitive without to
247. Development: Words, phrases, clauses
248. Drill on adjective clauses
249. Development: Concord of relative pronoun and antecedent
250. Development: The noun clause
251. Drill on noun clauses
252. Connectives: Explanation and drill
253. Distinctive uses of connectives illustrated
254. Synthetic drill on connectives
255. Relative pronouns
256. Exercises in false syntax

Chapter XII. Geography.

257. The old and the new
258. Illustration
259. Broader educational use
260. New York City Course of Study
261. Introductory note
262. Practical purposes
263. Intellectual purposes
264. Ethical purposes
265. Col. Parker quoted
266. Home geography
267. Fundamental facts
268. Early lessons
269. Points of compass
270. Distance

SECTION

271. Maps
272. Models
273. Constructive imagination
274. Analytic and synthetic methods
275. The synthetic method of teaching
276. Excursions
277. McMurray on excursions
278. Order of treatment
279. Representative Geography
280. Derivative or Descriptive Geography
281. Rational Geography
282. Observational Geography
283. Concentric circles
284. Illustration of concentric arrangement
285. Causal relations
286. Causal series
287. Man and nature
288. Types in geography
289. Illustration of a type
290. Comparison
291. Plan of study
292. Plan for studying a country
293. The recitation

SECTION

294. Use of pictures
295. Outlines by pupils
296. Aids
297. Dr. Maxwell on geography
298. Suggestions to principals
299. Results that are essential
300. Suggested ideas and devices
301. The globe and its uses
302. The shape of the earth
303. Climate
304. Forms of moisture
305. Rain
306. Glaciers
307. Icebergs
308. The seasons
309. Zones
310. Isotherms
311. Latitude and longitude
312. International Date Line
313. Standard Time
314. Volcanoes
315. Winds
316. Trade winds
317. How to study a map
318. How to study the text

Chapter XIII. History and Civics.

319. New York City suggestions
320. Early work in history
321. Geographical background
322. Current events, anniversaries, excursions
323. Members of society
324. Topics for discussion in all grades
325. Importance of local ordinances
326. Government by the people
327. Aim of history and civics
328. The historical sense
329. Value of study of history
330. Text-book method
331. Use of illustrations
332. Collateral reading
333. The use of maps
334. Collections of prints and pictures
335. Excursions
336. Correlation
337. Reviews
338. Open text-book recitation
339. Topical method
340. Verbal repetition
341. What should be memorized
342. Use of mnemonics
343. Questions prepared by pupils
344. Outlines made by pupils
345. Debates
346. Note-books
347. Source method
348. How to arouse interest
349. Cause and effect
350. Progress maps
351. Chronology
352. Biography
353. Use of outlines

SECTION

354. Dramatization of historic events
355. Local government
356. Pupil self-government
357. The process of legislation

SECTION

358. Institutional study of history and civics
359. Mental results
360. Habituation to civic requirements

Chapter XIV. Arithmetic.

361. New York City view
362. Suggestions
363. The combinations
364. Addition and multiplication
365. Subtraction and division
366 Constructive and inventional exercises
367. Problems
368. What to look for in solution of problems
369. Analysis in solution of problems
370. Rote work criticised
371. Progressive advance in difficulties by grades
372. Utility of arithmetic
373. Historical views
374. Definition of number
375. Counting and measuring
376. Aim of primary arithmetic
377. Methods of teaching the concept of number
378. Summary of modes of concrete number operations
379. The use of a book by pupils
380. Devices for drill in primary grades
381. How to mark papers
382. The nature of the problems
383. Addition
384. Subtraction
385. Multiplication
386. Division
387. Grube method: characteristics, advantages
388. Objections to Grube method
389. Speer method
390. Spiral method
391. Graphic methods
392. Multiples
393. Divisors
394. Common fractions
395. Decimal fractions
396. Denominate numbers
397. Percentage
398. The syllogism used
399. Algebra used
400. Tests of divisibility
401. Short processes and business methods
402. Simple interest
403. Ratio
404. Problems illustrating progressive order of difficulties
405. Unitary analysis
406. Variable unit
407. Series
408. Decimation
409. Decomposition
410. Other terms explained

Chapter XV. Reading.

411. Value
412. Characteristics of books recently used
413. Types of reading matter used now
414. Principles determining the selection of reading matter
415. Analytic methods of teaching primary reading: word, sentence
416. Synthetic methods: alphabet, phonic
417. Combination method
418. McCloskey method

SECTION

419. Rational or Ward method
420. Guiding principle today
421. Suggestions for beginners
422. Good reading defined
423. Physical difficulties
424. Mental difficulties
425. Reading to pupils
426. Meaning of words
427. Aim of phonic training
428. How to arouse interest
429. Complete works vs selections
430. Critical reading
431. Silent reading
432. Difficulties in the selection. See 490
433. Articulation violated
434. Accent and emphasis

SECTION

435. Inflection
436. Modulation: pitch, quantity, quality
437. Pauses: grammatical, rhetorical
438. Control of the breath.
439. Extensive and intensive reading
440. Home reading
441. Literature and character
442. Memory gems
443. Patriotic selections
444. How to memorize a selection
445. Biography
446. Rhetorical exercises
447. Adaptation
448. Variety
449. Correlation
450. Habit

Chapter XVI. Examination Department. Typical Questions and Answers.

451. Association of ideas
452. Observation: cultivation of power of
453. Attention and interest: ten rules
454. Consciousness
455. Attention defined, discussed, illustrated
456. Will: James on balky will
457. Will: method of training
458. Mind-wandering
459. Apperception, correlation, general notion, logical memory
460. Attention and interest
461. Imagination
462. Memory discussed and illustrated
463. Imagination and thinking
464. Stages in intellectual development
465. Particular notion to general notion
466. Clearness in education
467. The meaning of terms: sensation, concept, image, induction
468. Active, mobile children
469. Many-sided interest
470 Subjects suited to training of faculties
471. Formal steps of instruction
472. Marking pupils' papers
473. Home study: arguments for and against
474. Meaning of terms in pedagogics: natural punishment, etc.
475. Meaning of terms in pedagogics
476. Culture epochs
477. Concert or rote recitation
478. Concert recitation
479. General method applied to grammar
480. Things vs. words
481. Learning defined
482. Aims in penmanship
483. Principles underlying habits
484. Induction, deduction
485. Correlation, variety, induction, miscellaneous questioning, concrete methods
486. Individual notions
487. Self-realization
488. Principles of education
489. Discovery vs. being told
490. Reading: difficulties and remedies

SECTION

491. Pronunciation of shrimp
492. Economy of expression
493. Composition criticised
494. Composition criticised
495. Meaning of words: fortify
496. Methods: development lesson in reading
497. Composition: method of teaching
498. Dictation: faulty, good
499. Homonyms and synonyms
500. The meaning of words
501. Misspelling
502. Value of debates
503. Comparison in study of an animal
504. Drilling discussed and illustrated
505. Value of types
506. Types in geography: New York City.
507. Teaching defined and illustrated
508. Renaissance.
509. Outline on the Erie Canal
510. Outline of topics on Hudson River: reasons
511. Topical method applied to New York State
512. School virtues and evils
513. Serviceable memory
514. Jacotot
515. Walker on old and new education
516. Hinsdale's view of education discussed
517. Symbolism
518. Ideals in education
519. Discipline of consequences
520. Self-activity illustrated
521. Analysis in percentage
522. Percentage: analysis, formula, algebra
523. Questioning: consecutive, promiscuous, simultaneous
524. Questioning: faulty questions criticised

SECTION

525. Methods, advantages and disadvantages: five applications
526. Same topic as 525: five more applications.
527. Battle of Saratoga decisive
528. Methods: question, conversational, lecture
529. Self-reporting system criticised
530. Assignment of lessons criticised
531. Drawing correlated
532. Drawing a group
533. Punishment: defined, approved, not approved
534. Emulation
535. Analogy
536. Syllogism
537. Fatigue
538. Note books
539. Social stimulus
540. Circle of thought
541. Formal discipline
542. Visualization
543. Inhibition
544. Suggestion
545. Connotation of terms
546. Extension and intention of terms
547. Imitation
548. Abstraction
549. Action: reflex, impulsive, automatic, deliberative
550. Nature study: aims, defects, suitable lessons.
551. Too much written work
552. Dr. Maxwell's suggestions on arithmetic
553. Drill in observation
554. Writing as a penalty
555. Value of phonics
556. Two trials in spelling
557. Syllabication
558. What to observe in studying spelling
559. Relation of climate to animal life
560. Lessons on latitude, Arctic life

Chapter XVII. Answers in Methods for Assistant to Principal.

SECTION

561. Exercises in reading before text-book
562. Ways of teaching the meaning of words
563. Difficulties in teaching English to foreigners
564. Unitary analysis

SECTION

565. Multiplication of decimals
566. What part one fraction is of another fraction
567. Ideas and thoughts in history; outline of Growth of the Union
568. Chicago as a type in geography

Chapter XVIII. Answers in School Management for Assistant to Principal.

569. Promotion: principles
570. Games for first year
571. Dishonesty: cheating and stealing
572. Control of feelings and desires
573. Points of fatigue, plenum vacuum, moral imbecile, artificial incentives
574. Adjustment of seats and desks

Chapter XIX. Answers in Methods for License No. 1.

575. Primary reading exercise on Hiawatha
576. Lessons on phonograms
577. Agreement of relative pronoun and antecedent
578. Processes before reasons in arithmetic
579. Devices for rapid drill in addition
580. Causal series in geography
581. Type-studies in history
582. Nature study lesson on the spider

Chapter XX. Answers in History and Principles of Education for License No. 1.

583. Aims in distributing questions among pupils.
584. Causes of lack of interest in reading lesson
585. Principles justifying certain processes in teaching
586. Three principles underlying habit
587. Synonyms discriminated
588. Plato, Comenius, Jacotot, Spencer, Rousseau, Milton
589. Scholasticism
590. Jesuits, Froebel, Spencer
591. Double translation
592. Power of observation
593. Music in Greek education
594. Herbart's doctrine of interest
595. According to nature
596. Realism and naturalism
597. Indirect instruction
598. Seven Liberal Arts
599. Emile's studies
600. Complete living

Chapter I. Introduction.

1. **The purpose of education.**—It is not necessary to try to construct a new definition of education. By examining a few of the definitions before us, we find that the best modern thinkers consider that education should give to each individual a full development of all his powers. This means physical power, intellectual power and moral power. It is a threefold harmonious development that will enable each individual to know, to feel, and to do his duty to himself and to the civilized community in which he lives. It means character and efficiency. For further consideration, see Chapters I and II in McEvoy's Epitome of History and Principles of Education. See section 6.

2. **Scope of this treatise.**—The purpose of education expresses an aim or an ideal. It gives us a criterion for educative effort. Then we must consider the subject-matter suitable in attaining the ideal. In all our views regarding the use of subject-matter, we must think of the one to be educated; and this latter thought necessitates a knowledge of psychology. The next step is the process or method in adapting and presenting the subject-matter to the mind. The plan summarized:

1. Ideals, aims or purpose in education.
2. Subject-matter in education: the curriculum.
3. The mind to be educated: psychology.
4. Method in education: the processes.
5. General organization: school management and discipline.

3. **Scope of methods in education.**—The treatment of methods of teaching is usually restricted to particular ways of presenting arithmetic, geography, grammar and other subjects in the curriculum. But the larger conception in modern educational thought requires the teacher to see and to feel that methods in

education mean an orderly movement of the human mind, and so it is necessary to understand the essentials of psychology and allied studies, which are the sources of all sound methods in education. For this reason, the student will here find some topics not ordinarily discussed in a book on methods.

4. **Meaning of pedagogics.**—As an illustration of the tendency toward comprehensive treatment of topics in education, many schools are classifying their educational courses under the term pedagogics. The word pedagogics is derived from two Greek words meaning the training or guiding of boys. Its larger signification at present covers the theory and the practise of teaching as a profession, embracing the application of history and principles of education, methods of teaching, school management, psychology and ethics.

The effort to systematize all the facts in pedagogics, is influenced by three sources of investigation.

1. Rational psychology. This basis is used by Rosenkranz in his Philosophy of Education.
2. Content of studies and processes of mind. The importance of these two standards is exalted by Herbart in his Science of Education.
3. Child study.

Our interpretation of methods as a part of pedagogics utilizes the three sources of investigation just mentioned.

5. **Science of education.**—The relations of methods to the science of education receive some discussion in this book, but those who desire a deeper study are directed to McEvoy's Science of Education. The twenty-one chapters deal respectively with these subjects: Directions to Students, The Study of Education, The Meaning of Education, The Subject Matter of Education, Superintendent Maxwell on Course of Study, Characteristics of Modern Courses of Study, The Culture Epoch Theory, Psychology, Instinct and Habit, Attention and Interest, Principles of Education, Methods in Education, Ado-

lescence, Phases of Teaching, Examinations, Some Special Problems, School Management, Approved Set of Answers, Other New York Questions and Answers, Questions for Students, and Bibliography. (265 pp., $2, T. J. McEvoy, Cortland, N. Y.)

6. History of education.—The historic development of methods in education is a fascinating and valuable study. This phase of the subject will not be repeated since it has been given adequate treatment in McEvoy's Epitome of History and Principles of Education. (267 pp., 75 cents, T. J. McEvoy, Cortland, N. Y.)

Chapter II. The Curriculum.

7. **The teacher and the course of study.**—The average teacher has little to do in determining a course of study, but every teacher has much to do in carrying out the requirements of prescribed courses. It is necessary, therefore, to know the underlying principles so that the mutual rights of the child and the curriculum may be wisely adjusted.

In the first place, a course of study is not a rigid standard of work, irrespective of pupils, teachers and methods; it is, on the other hand, conditioned by those three factors, and all four must yield to satisfy the needs of each. When Rousseau insisted upon a curriculum of natural material adapted to the nature of the child, he directed attention to what has recently been recognized, namely, that the needs of the child must determine the course of study and not vice versa.

8. **Principles determining course of study.**—Our conception of education embodies the reciprocal relations of the individual and society. It is not enough to know our civic duties; right thinking must pass into right action. So the first principle is a sociological one; the second, psychological. The former shows what subject-matter will tend to develop broad, useful, efficient knowledge; the latter indicates the manner of adapting the chosen subjects to the capacities of individual minds.

9. **Butler on studies.**—An illustration of the principles in 8 may be seen in the course of study outlined by President Butler of Columbia University. In defining education he says: "What does the term mean? I answer, it must mean a gradual adjustment of the spiritual possessions of the race. Those possessions are at least five-fold. The child is entitled to his scientific inheritance, to his literary inheritance, to his aesthetic inheritance, to his institutional inheritance and to his religious inheritance."

The scientific inheritance is found in geography, nature study, mathematics and physics; the literary inheritance includes all forms of literary compositions and interpretation; the aesthetic inheritance includes drawing, music and all other kinds of art that may aid in forming a higher conception of life; the institutional inheritance is found in all kinds of civic training, including political geography, history, civics, and all the subordinate forms of government represented in state and municipal organizations; and the religious inheritance includes all forms of training that are conducive to spiritual perfection.

The course of study in New York City is in agreement with the requirements mentioned by Butler.

10. Former courses of study.—As an interesting comparison, recall what was taught in the oriental nations and then trace the development through the following courses of study:

1. Greece, Music and Gymnastics. (Pages 38 and 58, Epitome).
2. Rome. (Pages 60 and 70, Epitome).
3. Seven Liberal Arts. (P. 86, Epitome).
4. Sturm's Classical High School Course. (P. 128, Epitome).
5. Ratio Studiorum of the Jesuits. (P. 130, Epitome).
6. The Comenius Course. (P. 154, Epitome).
7. Views of Harris, Dewey, DeGarmo and others. (Chapters IV and V, Science of Education).

11. Contrast of courses of study.—Twenty-five years ago the elementary school taught reading, writing, spelling, grammar, geography, United States history, and what was called civics. In order to fill in the time arithmetical rules of no possible use in life were taught, and the children's wits were exercised or blunted by outlandish mathematical puzzles; a manual of United States history and the constitution of the United States were learned by heart; long lists of meaningless names were memorized in geography; parsing, with the utmost detail, was continuous; drawing, where drawing was taught, was ex-

clusively from flat copies, and the crowning glory of the school was held to be the ability to spell sesquipedalian words whose signification had never dawned upon the childish intellect.

The additions are nature study, intended to train what President Eliot calls the 'capacities for productiveness and enjoyment' through the progressive acquisition of an elementary knowledge of the outside world; algebra, chiefly as an aid, through the equation, to the solution of arithmetical problems; inventional geometry; literature, studied as such, distinct from the ordinary reading lesson ; language and composition, as the act of expression; drawing from objects; and manual training and other physical exercises. This seems a long list, and yet every subject is justified and required by the fundamental assumption that the school exists for the progressive adaptation of the child's mind to its spiritual environment. In other words, each child has a right to the acquisition not only of the tools of knowledge, but at least to the beginnings of a knowledge of literature, of science, of art, of institutions, and of ethics, so that when he leaves school he may be able to continue along the road on which he has started.—Maxwell, St. Louis Address, 1904.

12. **Enriching the course of study.**—This expression is an indication of an effort to frame a curriculum that will satisfy the majority of pupils. The first paragraph in 11 mentions a rigid course formerly used; but as a large number of pupils must leave school before completing the elementary course, it is desirable to give them some knowledge of the advanced subjects which bear directly upon the affairs of life. It has been found, too, that for all pupils the elements of advanced subjects may be taught long before technical words are understood. This effort to give breadth, utility and interest to all elementary work is called enriching the course of study. For illustration see second paragraph in 11.

13. **The culture epoch theory in relation to courses of study.**—This theory may be expressed in these words: "The individual

mind in its development repeats the order of development of the race mind." The history of civilization presents certain stages or epochs as The Stone Age, The Age of Iron, etc.; or, under another classification, wild, barbarous, semi-civilized and civilized. Now if each stage of race development shows certain culture products in religion, history, literature, etc., then such culture products should be arranged in the course of study for the corresponding epochs or stages in child development. "Fairy-tales for the child, history for the youth, philosophy for the man."

Any attempt to apply the theory closely must be futile, for only the most general correspondence can be found between the periods of the child's development and the epochs of race growth. Even if it were possible to establish exact correspondence, it would be unwise to plan a course of study and methods of teaching in strict conformity therewith, for the sufficient reason that, in his recapitulation, the average child exhibits some characteristics it is highly desirable to eliminate. The child, as the heir of the race, should be put in possession of only the best which the race has gained for him. And he should be trained to adapt himself to the actual conditions of modern life, not to those of bygone eras.—Roark, Economy in Education, p. 211.

In America this theory has not been generally accepted. The experiments that have been made here are based upon the manumental arts in recognition of the efforts of the race to adjust itself to its material environments. We do, however, admit that there should be an adaptation of subject-matter in a course of study, and the culture epoch theory has given some aid in making this adaptation. See page 25 in Dexter and Garlick's Psychology.

14. Correlation of studies.—Correlation is putting such subjects side by side at a given time in the course as will help to bring to view the universal relations involved in the study of any one of them.—Tompkins, Philosophy of Teaching, p. 263.

Illustration: "In treating the Hudson river as a type we come upon the mountains, forests, water power, and manufacturing of its upper course; the navigation, cities, railroads, and scenery of its lower course; its commercial connections by canal with the coal fields of Pennsylvania, with the forests of the north by canal to Lake Champlain, with the Great Lakes by the Erie canal along the Mohawk to Buffalo. The harbor and city of New York and their easy connections with the Great Lakes and the upper Mississippi Valley, are on one side, with the Atlantic coast and the marts of Europe on the other. Historically, the Hudson is very attractive; Hudson and his contact with the Indians, Washington and his campaigns, the old forts and the battle scenes, Arnold and Andre, Burgoyne's invasion. In literature Irving has made certain spots on its banks as famous as the old battle grounds. From a purely scientific standpoint, the great drowned valley, its palisades, mountains, and incoming ocean tides are at once suggested. Thus we have the relations of geography to history, literature, and natural science."

15. Report of the Committee of Fifteen on correlation of studies.— Your Committee understands by correlation of studies:

1. Logical order of topics and branches

First, the arrangement of topics in proper sequence in the course of study, in such a manner that each branch develops in an order suited to the natural and easy progress of the child, and so that each step is taken at the proper time to help his advance to the next step in the same branch, or to the next steps in other related branches of the course of study.

2. Symmetrical whole of studies in the world of human learning

Second, the adjustment of the branches of study in such a manner that the whole course at any given time represents all the great divisions of human learning, as far as is possible at the stage of maturity at which the pupil has arrived, and that

each allied group of studies is represented by some one of its branches best adapted for the epoch in question ; it being implied that there is an equivalence of studies to a greater or less degree within each group, and that each branch of human learning should be represented by some equivalent study ; so that, while no great division is left unrepresented, no group shall have superfluous representatives and thereby debar other groups from a proper representation.

3. Psychological symmetry—the whole mind

Third, the selection and arrangement of the branches and topics within each branch considered psychologically with a view to afford the best exercise of the faculties of the mind, and to secure the unfolding of those faculties in their natural order, so that no one faculty is so overcultivated or so neglected as to produce abnormal or one-sided mental development.

4. Correlation of pupil's course of study with the world in which he lives—his spiritual and natural environment

Fourth and chiefly, your Committee understands by correlation of studies the selection and arrangement in orderly sequence of such objects of study as shall give the child an insight into the world that he lives in, and a command over its resources such as is obtained by a helpful co-operation with one's fellows. In a word, the chief consideration to which all others are to be subordinated, in the opinion of your Committee, is this requirement of the civilization into which the child is born, as determining not only what he shall study in school, but what habits and customs he shall be taught in the family before the school age arrives; as well as that he shall acquire a skilled acquaintance with some one of a definite series of trades, professions, or vocations in the years that follow school; and, furthermore, that this question of the relation of the pupil to his civilization determines what political duties he shall assume and what religious faith or spiritual aspirations shall be adopted for the conduct of his life.—Pp. 40, 41.

16. **Concentration of studies.**—A curriculum based upon concentration of studies has one study as the centre or core and other related studies are grouped around the core. Ziller, a disciple of Herbart, used literature and history as the core; Col. Parker used geography; and John Dewey advocates manual training.

Concentration favors a strict interpretation of the culture epoch theory. Germany favors concentration but America does not. Ziller used Robinson Crusoe as the central study. All language lessons were based upon it; arithmetic measured the voyage, the time on the island, the number of sheep and goats, etc.; geography became vivid by tracing the routes and locating the island; constructive powers were exercised in imitating Robinson in making ladders, fish-hooks, tools and other equipments; moral lessons were learned from Robinson's patience, kindness and perseverance. In America Hiawatha has been used in making similar typical lessons.

17. **Co-ordination of studies.**—The arrangement of studies in groups of equal rank is co-ordination of studies. See Butler's views in section 9.

18. **Correlation, concentration and co-ordination distinguished.**—Observe that concentration makes use of one central study with radiating lines of related knowledge; that co-ordination makes use of more than one study,—five in the scheme of Harris, such groups being of equal value; and that correlation utilizes the general lines of related knowledge running through and unifying all the subjects and all the groups of subjects in the course of study. Correlation is a general term including concentration and co-ordination.

Chapter III. Definitions in Psychology.

19. Limitations.—The two chapters on psychology are not a substitute for an approved text-book on this subject. In this chapter certain definitions are given to aid students who do not need to make an exhaustive study of psychology in order to pass in methods. The definitions are based upon Dexter and Garlick's Psychology in the School Room, abbreviated D.; Welch's Teachers' Psychology and Gordy's New Psychology.

20. Consciousness.—Consciousness is the name given to all possible mental operations.—D., p. 2.

21. Mind.—Mind is a spiritual force that manifests itself in knowing, feeling and willing.

22. Knowing.—Knowing is the act of affirming the certainty of states of consciousness.

23. Feeling.—Feeling is a term that indicates pleasant or painful states of consciousness.

24. Willing.—Willing is the act of the mind in making a choice of desires.

25. Will.—The will is the power which operates in the mind in willing.

26. Faculties.—A faculty is a mental power which acts upon objects, external or internal, and discriminates them from one another. We must not, however, think of the mind as composed of separate faculties. The mind is a unit, but it can manifest itself in different ways; and for convenience we shall use the word faculties to indicate the different manifestations of power.

27. Object, action, product of a faculty.—"That on which the mind acts in the exercise of any faculty, is termed the object of that faculty. I hear a peal of thunder; the sound so heard is the object of the faculty of hearing. The action of this faculty is called listening; the product of such action on the

object referred to, is a notion or idea of the sound of thunder." In teaching, the subject matter of instruction is the object; the principles of education are applied in the action; and the product is the ultimate purpose of all education.

28. Attention.—Attention is the centering of the act of any faculty upon its object, by an impulse of the will.—Welch.

Consciousness occupying itself with an object is attention.—Horne.

Attention is concentrated consciousness. Attention is not a faculty of the mind; it is simply a concentration of consciousness upon some particular object, external or internal.

Attention is that act of the mind by which we bring into clear consciousness any subject or object before the mind.—Gordy.

29. Interest.—Interest is the name given to the pleasurable or painful feelings which are evoked by an object or an idea, and which give that object the power of arousing and holding the attention.—D., 31.

30. Apperception.—Apperception is the process by which a mass of presentations assimilate relatively new elements, the whole forming a system. The new material assimilated may be either given in sensation or reproduced by the internal working of the psychological mechanism; and attention, in the broad sense of noticing an object, coincides in the main, but not altogether, with the apperceptive process.

Apperception is the interpretation of new knowledge in the light of that previously obtained: mental assimilation.

31. Sensation.—A sensation is a simple mental state resulting from the stimulation or excitation of the outer or peripheral extremity of an incarrying or sensitive nerve.—Sully.

32. Sense-perception: the gathering of percepts.—Perception is the general name of a faculty through whose action the mind gains knowledge, whether of things without or within ourselves. Sense-perception is the faculty which supplies the mind with knowledge of external objects through the action of

the senses of touch, sight and hearing. In exposure to a storm I see, hear, and feel the driving rain. In this act of sense-perception the senses employed are those of touch, sight and hearing. The object is the driving rain; the acts put forth are feeling, seeing and hearing; and the product of these acts, while in progress, is a notion or *percept* of the rain. The percept in this case unites in itself the elements gained from feeling, seeing, and hearing. If the object of my sense-perception had been a thing which was visible but not tangible, or audible, as a picture, a cloud, or a rainbow, the percept would have contained only the elements gained from the act of a sight.—Welch, 5.

33. **Observation.**—Observation is the acquisition of knowledge by direct sense-perception.

34. **Memory: storing concepts.**—Memory is the faculty which unconsciously receives, retains, and restores the products or ideas gained through the action of the other faculties.—Welch, p. 6.

35. **Imagination: building concepts.**—The process of making images is imagination. An image is a revived percept.

36. **Conception: holding concepts.**—Conception is a mental process which results in a concept.—D., 150.

37. **Concept.**—A concept is a re-presentation in our minds answering to a general name.—Sully.

38. **Judgment: connecting concepts.**—A judgment is an assertion of agreement or disagreement between two ideas.—D., 163.

39. **Reasoning: deriving concepts.**—Reasoning is the faculty that derives new truths or concepts from class concepts already known.—Welch, 11.

40. **Self-activity.**—Self-activity, as a principle in consciousness, means self-direction.—Horne.

Conscious effort in the evolution of possibilities is termed self-activity.—Boyer.

41. **Habit.**—A fixed tendency to think, feel, or act in a particular way is habit.

Chapter IV. Methods in Mind Training.

42. **The plan simplified.**—The subject of this chapter is comprehensive enough to include the whole field of education. Students are confronted with conflicting theories about the possibility or impossibility of training the faculties, and then further conflict is found regarding effectual methods. Let us take it for granted that each faculty can be trained, or else it will be necessary to defend the value of education of any kind; and let us see if there is a simple presentation of methods of training the mind.

43. **The plan outlined.**

FACULTIES.	PRINCIPLES OF EDUCATION.	RESULTS.
Sensation.	Attention.	Habit.
Perception (Observation).	Interest.	Habituation to
Memory.	Apperception.	right thinking,
Imagination.	Self-activity.	right feeling,
Conception.		right willing.
Judgment.		
Reasoning.		

44. **The plan explained.**—The first column shows the faculties *in their natural order of development.* In each faculty there is a physical factor and a psychical factor to be considered. The former is the physical substance of the body; the latter is the mental or spiritual result of the process.

In every educational process there are certain principles of education to be observed. They are given in the second column. Thus in training any one of the seven faculties, all four of those principles should be used; and the order in which they are used is the order given in the second column.

There are many aims of education but it is possible to summarize all of them in habit. The process of forming habits is habituation. School life may only begin the process but school

life should direct the habituation toward the right end. Think of all the purposes of education as you view them and see if they are not all included under habituation to right thinking, right feeling and right willing.

45. Physical basis of mind.—The entire body is the physical basis of the mind. Strictly speaking, the nervous system is the basis, but it is better to consider the nervous system as the intermediary between the mind and the other parts of the body. In either view, the close relation between the physical and the psychical is evident. This relation shows the necessity of observing the physical conditions of the child himself, of the school and of the home. Little progress can be made in mental training if the child is hungry, fatigued, ill, or uncomfortable on account of light, heat, ventilation or seating.

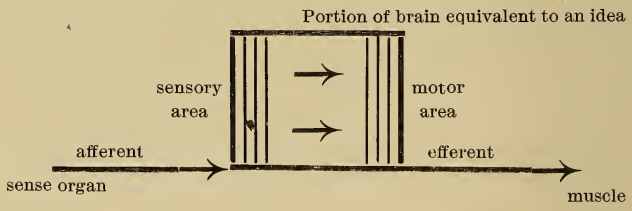
Another phase of the physical side of educations relates to actions and reactions. An external stimulus of any one of the senses is transmitted by the afferent nerve to the brain; if agreeable the brain will receive the message and then transfer the message by an efferent nerve to the motor organs. Thus the brain is said to react upon sensations. It is the teacher's duty to present all subject-matter in such a way that each mind can receive favorable impressions. Then the mind will react, i. e., convert the impressions into action and thereby complete the process of getting ideas.

46. Reaction in psychology.—A further explanation of the last paragraph is necessary. The meaning of mental reaction is expressed in the maxim, "There is no impression without expression." Another view of it is this: "Every idea tends to realize itself in action." In teaching it is necessary, therefore, to see that there is a reaction; that the impression receive its complementary expression through verbal reproduction, written reproduction or material reproduction as exemplified in the various forms of manual training.

James expresses himself thus: Regular response to stimulation is reaction. Education as a process consists in furnishing proper stimulation and in directing the responses.

Sensuous impressions are not properly educative if they fail to beget a correlative motor activity. The physiological process is this: (1) impulse from external centre; (2) the translation in the central process; (3) the changed impulse is transmitted to the motor organ.—Talks to Teachers, Chapter V.

47. **Diagram for reaction.**—The physical basis for every conscious process is the passing over from afferent process to efferent process. Every mental state implies a bodily action. Compare self-activity.



48. **Summary.**—All the faculties are trained by the process of reactions. The selection, arrangement and presentation of matter suitable for reaction requires the use of sound methods of teaching. The harmonious relations of processes, principles and results must be kept in view as explained in 44.

49. **The relation of psychical elements.**—If the question arises in regard to what psychical elements constitute any one of the faculties, simply recall the order of the faculties and then remember that each faculty includes all of the preceding faculties. Thus the psychical elements in imagination are sensation, percepts and memory products.

50. **The training of the will.**—The matter suggested in the following sections on the training of the will is given for the benefit of those students who are unable to satisfy themselves with the material given in the ordinary text-books. This outline is not intended to supplant any other authorized material; it is given in the form of suggestion.

Strength of will does not mean physical force. It is mental and cannot be measured by any physical unit. Strength of will lies between the weakness of will and stubbornness.

51. Characteristics of a weak will.

1. Failure to pursue the same object to the end. The object may be dropped altogether or it may be changed frequently. The probable cause is that the leading impulse in life has lost its force.
2. Little or no power over impulse, inclination or habit. There is a conflict of emotion but not a conflict of ideas in the mind.
3. A weak will magnifies difficulties and shrinks from them. The magnified perception of difficulties causes effort to avoid such obstacles.
4. Easily moved by threat, persuasion or example. Imitation is an important function of the mind. The man of weak will is afraid that if he does not do wrong as he sees it in others he will be looked down upon.
5. Lacking in power of concentration. The more he tries to concentrate his attention, the less he seems able to do so. This is the strongest characteristic, psychologically considered. The weak will cannot hold the predominating idea before consciousness.

52. Characteristics of the stubborn will.

1. Steady adherence to a purpose once formed. This is the foundation of stubbornness.
2. Unwillingness to take opposite view, alter judgment or change course of action. This is the real characteristic of stubbornness. The man refuses to yield although there are good reasons; he is unreasonable.
3. The liability to continue in evil as well as in good; very bad effects from this.

4. Power of concentration on himself instead of on the object that elevates his action. He will not abandon himself to accept the view of another.

53. **Characteristics of strength of will.**—As has already been said strength of will lies between weakness of will and stubbornness of will.

1. The ability to follow the dictates of reason instead of feeling, inclination or habit. Reason should move the will. It implies ability to follow reason but does not necessarily force one always to follow that reason.
2. Readiness to change action when reason has made its decision known to the will. The keystone of the will is the ability to hold an idea before consciousness. This is the opposite of 5 under 51. This holding becomes the cause for analysis of idea and new channels in motor efficiency become operative as new phases of the idea appear.

54. **Practical effects.**—Reflection upon thought of reform leads to action. Here is the analysis of the idea again; not impulsive action but reason and will working together. Better results from personal reflection than from impulsive action under external influences. There is a subjective decision after holding the idea steadily before the mind.

55. **Causes of weak will.**—The causes are physical or mental. Any organic trouble will weaken the will. Ordinary physical weakness such as fatigue affects the will. No great task should be undertaken after a hard day's work nor should any important decision be made at that time. Among the mental causes of weak will are the following:

1. The lack of definite aim. Aimlessness wastes energy by scattering it; the will is deadened.
2. Half-hearted resolve with hesitating execution.

3. The failure to realize that success depends on each individual volition.
4. The lack of orderly, systematic living. Too much routine is not desirable, but all the less valuable affairs of life should be put into mechanical processes.
5. Over-estimating our ability to do things. If too much is undertaken the brain and the nervous system rebel. When the time for rest does come, the nervous system lacks power to rest in proportion as it has been overworked during the time for work. An application of this last thought is found in setting tasks for pupils. If the child's ability is 90, see that the maximum task is less than that. The danger is not the failure itself but the child's realization of failure. The imagination is likely to exaggerate the failure and thus weaken the will.

56. Causes of strength of will.—In general the causes of strength of will are the opposite of the causes of weakness of will. Some particular causes are the following:

1. Intellectual habit of making our ideas clear. The influence of motor effects is powerful.
2. Power to turn upon ourselves and determine our strength and weakness. This is self-knowledge. If we are surprised at ourselves it is proof that we do not examine ourselves often enough.
3. Prompt execution of those things we decide upon.

57. Cultivation of will power: preliminary processes.—It is necessary to have certain principles or convictions which can be used in undertaking the cultivation of the will. The main factors are outlined here.

1. An abiding conviction that the will can be strengthened. Sporadic efforts are not useful. Doubt or resignation will render the task worthless; we must have definite convictions in favor of success.
2. Find our habits by introspection and then analyze these habits. It is not enough to see the existence of habits; we must see how such habits assert themselves and then remove the causes of undesirable habits. We should follow this process regarding impulsive action in particular.
3. Cultivation of the will must be a continued effort. A few efforts or a few successes in checking tendencies cannot possibly do such an important work. Time is required for the cultivation of any vital process. Danger is in procrastination; the date of beginning correction is put off in the idea that we can do the desired correcting in a short time. We cannot do so.
4. Cultivation of the will takes place through willing. It does not come through contemplation. Illustration—Learning to play piano.
5. After finding tendencies out by analysis, take each tendency separately. Select the one that is the root or occasion of one or more bad habits and focalize will power upon that one. The reason for this is that the amount of will bestowed upon this one will lighten the work of correcting all of the others.

58. **Cultivation of will power: actual processes.**—Positive action is leading to willing to do something. Negative action is leading to willing to leave something undone. Is inhibition ever advisable? Will power as such is always positive. Positive and negative actions will be considered separately.

59. **Negative action and cultivating the will.**—One process is the gradual breaking off of the habit. The character of the individual, the nature of the habit, the length of time the habit has existed, etc., will determine whether the change should be gradual or abrupt. In this work we are considering the effect upon the will, not the effect upon the body; therefore no general rule can be laid down. The suggestions under abrupt breaking of habit are considered one by one.

1. Prepare by various minor acts of control. Do this especially when habit is strong and obstinate. The minor acts will begin the self-assertion of the will. Every act of this kind gives will much reserve power for the principal resolution.
2. When resolution is taken, do not look too far into the future. The imagination becomes an opposition to will. If we carry out resolution for the present, we shall find that we shall suffer no positive privation in the future
3. Force of privation is not realized until we try to break habit. Such craving can be lessened by turning attention to craving itself rather than to the object of craving. Reason: Attention to objective makes craving more vivid by increasing motor power. New law in psychology is that attention to emotion decreases strength of idea; attention to object increases strength of idea.
4. Put off the suggested craving until a later time. Psychological law: Putting interval of time between craving and indulgence, lessens craving.

SUGGESTIONS

5. Have some absorbing thought to which attention may be turned when craving comes. The objectionable thought may be prevented from entering consciousness. Law of association.

6. Deliberately set obstacles in way of undesirable habit. Illustration: Man wishes to stop smoking; he knows he never smokes on street; when craving comes, go to street.
7. When one victory has been obtained, reflection upon victory tends to strengthen will.
8. When a failure comes, reflection upon trivial character of indulgence will strengthen will. See how little pressure was and how small the gratification is.

Chapter V. School Economy.

60. **Meaning.**—The rules, regulations and laws governing the conduct of schools constitute school economy. The word economy implies a minimum of waste and a maximum of achievement. For details of this subject see Shaw's School Hygiene, Morrison's The Ventilation and Heating of School buildings, Kotelmann's School Hygiene, and Dutton's School Management.

61. **Space.**—At least one hundred twenty cubic feet of space should be allowed for each pupil. The general requirements for recitation purposes, physical exercises, coat halls, etc., vary according to local conditions, but convenience and comfort of pupils and teachers are two essentials in all schools.

62. **Light.**—The light should come from the left hand side and somewhat above the level of the desk. Light from the right hand side causes the shadow of the hand to fall on the pupils' work; from behind, there is a larger shadow from the head and the trunk; from in front, the light is harmful to the eyes and round shoulders are caused by the pupils' bending down to avoid the direct glare. As a rule, light is permitted to enter from many parts of the room and then curtains or blinds are used to regulate the amount and the intensity of the light.

63. **Heat.**—The average temperature desired is 64 to 70 Fahrenheit.

64. **Ventilation.**—The aim of ventilation is to remove impure air and replace it by pure warm air. From thirty to fifty cubic feet of pure air per minute are required for each pupil. Some means of securing ventilation from circulation are the following:

1. Doors and windows. To be opened during marching, games and recreation periods.

"Boards, five or six inches in width, placed under the windows are a well-known device. Still better are hoods at the top of the windows, closely fitting the sash, so that when the windows are open from the top the air is deflected toward the ceiling, and is gradually diffused throughout the room without falling too directly on the heads of the pupils."

2. Shafts leading from outside the building up through the floor to a height of six or seven feet. This height is required so that no draft will be felt by the children.

3. By the indirect method fresh air is carried into the building through large ducts, containing stacks of radiating surface, and directly into the rooms through registers which are usually placed near the ceiling. The impure air is carried out through a register usually placed directly underneath the incoming air, by means of separate ducts made somewhat larger than those provided for fresh air. Thus a schoolroom, heated and ventilated in this way, has a volume of fresh air constantly entering the room and an equal volume of impure air constantly passing out.—Dutton, p. 62.

4. A gravity system is one where the draught necessary for withdrawing the foul air is caused by a heated chimney or duct. In every large building this method is not adequate or reliable, and ventilating fans are used either as a means of forcing the fresh air into the building, or of drawing out the foul air, or both.—Dutton, p. 62.

5. A fire-place is a good ventilator but not a uniform heater.

65. Seating.—Adjustable seats and desks are the best. The seat should be adjusted at such a height that the pupil's feet will rest on the floor while the legs from the knee to the thigh are at right angles to the trunk. The best adjustable desk has a slant of about fifteen degrees but it can be raised to a level when necessary. Seats that are not adjustable are usually arranged according to definite sizes.

66. Decoration.—This feature of school equipment has much to do with the spirit of the school. The walls and ceiling should be painted in some color restful to the eye. French grey, pale buff, and light green are approved. A few good pictures should displace a meaningless collection of cheap prints. Maps, diagrams and the superior work of pupils are legitimate kinds of school decoration. Some teachers hold that maps, diagrams and pupils' papers tend to distract the class by inviting attention away from the lessons, but a sounder view is that such diagrams have a high educative value from visualization during those periods when pupils naturally turn from study to relieve their minds. Compare James on mind-wandering.

67. Grounds.—Three paragraphs are quoted from Garlick's New Manual of Method, p. 6.

1. "Physical uses.—A play ground is the lung of a school. It is as essential to a proper and efficient education as the schoolroom itself. It is the workshop for the manufacture of the sound body, as the schoolroom is for the sound mind. It offers relief after mental work, and brings into play the overcramped muscles. It is a healthy agency for the overflow of that abundant spontaneity of child life, which may become so troublesome to discipline if not regulated."
2. "Its moral uses.—It brings brightness to the school life and helps to engender a love for

school by making it popular. It is a fine training ground for the emotions. Boys learn to discipline themselves in their sport, to submit their wills to the will of others. It is a great leveller and compensating force; for the dullard may be a physical adept. He wins in the playground the respect which he cannot attain in the school; for muscle is worshipped as much as brain. The bully is checked, the timid and shy get nerve and confidence by means of the playground's supervised play."

3. "The teacher's work.—Gymnastics should be encouraged by the teacher, and, in the case of boys, a little instruction might be given. Supervision should always be exercised. The presence of the teacher will often tempt a boy to try something which otherwise might be beyond his inclination. Games calculated to develop their strength, to give muscular control, to aid the growth of the will, such as our popular games, should be encouraged, sometimes shared, and sometimes directed by the teacher. Many now form and take an active interest in the cricket, football, and swimming clubs of their scholars, and they do not find it unproductive labor."

Chapter VI. School Management.

68. **Principles.**—The three essential principles underlying school management in New York City are definite responsibility, free discussion, and spontaneity and originality. These essentials are stated by Dr. Maxwell and discussed by him in McEvoy's Science of Education, page 238. These same principles apply to any other school system.

69. **Qualifications of Teachers.**—Health, scholarship, character and professional spirit are requisite qualifications of the good teacher. The importance of each of these is not determined by the order stated, nor do we mean to say that other qualities are excluded. Fidelity, sincerity, fairness, sympathy, and other particular characteristics deserve discussion, but our limited treatment makes the four general qualifications include all such particular indications of merit.

Another view of this topic is given on pages 143 to 148 in McEvoy's Science of Education. There Dr. Maxwell's opinion is given in full. Here an outline of his address will suffice.

How to Estimate a Teacher's Value.

By Dr. Maxwell.

Teachers deemed fit and meritorious should be marked A or B; all others, C or D. The A mark should be reserved for teachers of conspicuous ability.

IMPORTANT THINGS IN TEACHING ABILITY.

1. Ability to impart knowledge, or power of exposition. Do not do too much. Talking too much is a common fault.
2. Ability to interest pupils. Without interest, teaching fails to become a part of pupil's makeup.
3. Ability to train pupils to good intellectual and moral habits, i. e., character.

SIGNS OF POOR TEACHING ABILITY.

1. Requiring parrot-like repetition of text-book.
2. Most concert recitation is bad.
3. Neglecting pupils' observing and inventing powers.
4. Weak questioning.
5. Neglect in use of object teaching.
6. Waste of teacher's or pupils' time.
7. Rate teacher's scholarship by her mastery of her subject, daily preparation, and interesting application of current events.

   Rate effort by her activity in school work and by her efforts to improve by study outside of school.

PERSONALITY OF TEACHER.

1. Neatness and fitness of dress. No place for old society dresses.
2. Pleasing tone of voice and clear enunciation.
3. Sympathy for children.
4. Decision of character.

CONTROL OF CLASS.

The only control to be marked meritorious is that obtained by interest in the work. Promise of reward, fear and repression deserve C or D. Repeated presentation of dishonest work by pupils is evidence of unfit control.

Your general estimate of a teacher's ability need not be an average of your detailed marks. Bear in mind that the object of these ratings is not to fill columns with marks, but to do something to raise the teaching force of the city to a higher plane than it yet occupies.

70. Program.—Every school and every class in a graded school should have a daily program posted in a conspicuous place, and that program should be followed closely. This matter is so important that we think it necessary to give specific reasons.

1. Teaching by suggestion. When the teacher makes a program, posts it, and adheres to it for all periods of work and recreation, there is a silent suggestion for similar order in the life of every pupil. It is indirect instruction; it is suggestion; it is example. The worth of such systematic procedure is valued by pupils, and teachers will soon see that most of the pupils have made a neat copy of the entire program for individual desk use. By using a rubber pen the class program can be made large enough to be seen from any part of the room.

2. The law of habit. There is no need of blaming pupils for inability to study so long as teachers do not observe the psychological value of habit in studying. If we eat, drink, sleep, or attend to other physical needs at certain times, habit soon becomes so regular that no clock is needed to guide our wants. It is the same in mental habits. The study of mathematics at a certain time puts the body and mind into favorable conditions for mathematics at that time every day, and no great variation in time can be safely made. Likewise for each study and for each recreation exercise on the program.

3. The law of change or variety. A good program alternates difficult and easy periods, puts memory processes in the morning, and places the shorter periods in the afternoon. This variety is not theory; it is a physical necessity. The problem of fatigue has demonstrated this. See 107.

71. Opening exercises.—Some teachers think the regular work is so important that no time should be taken for morning

exercises. This is a mistaken opinion. Ten or fifteen minutes in the morning will do more in the real work of education than hours in the facts of mathematics or grammar. Why? Well, look back to the purpose of education. The pupils enter school each day well or ill, happy or angry, industrious or mischievous, as the case may be. There is lack of harmonious thought and action, lack of bodily and mental poise, lack of self-control. The one thing to do in education is to furnish the environment that will produce the desired conditions of mind and body. Books aside, comfortable position, reasonable silence, respectful attention,—these are conditions required for the morning exercises. These are the conditions that make the school a harmonious unit for the work of the day. Then follows the reading of Scripture or other exemplary books, singing, current events, recitation, declamation, or brief talks by the teacher.

The value of opening exercises in arousing a good school spirit is manifest. A second value is in stimulating punctuality. Habit is here a development; it is always so. Personal experience leads me to urge teachers to try some devices for overcoming tardiness.

The aim is to get the pupils to school in time once so that the process of habituation may be started. Make the pupil conscious of that one success by commending him. Then try these devices:

1. Memory gems. Have a short, pleasing memory gem on the board. Have pupils read it together, learn it together and repeat it together. Social stimulus in this. Learn one or two each week.
2. Desire. Read a portion of an interesting story two or three times a week. This arouses desire to hear more.
3. Interest in songs. Sing the old home songs occasionally. Let pupils select the ones.

4. Expectancy: declamation. Have a short recitation or declamation occasionally. Put title and name of pupil on the board the day before, or simply announce that someone will recite.
5. Monitors. Appoint tardy pupil a monitor to act before school calls. He will be present.
6. Motives. Organize for marching, athletics, memory selections, singing, perfect attendance,—something that will arouse class spirit in working under a motive.
7. Anecdotes. Read or relate an anecdote giving the value of punctuality. Exalt the positive, the good; don't preach about the defects. "My cook," said Washington, "never asks if the visitors have arrived, but if the hour has arrived."
8. The teacher an example. Teacher always punctual. Have a program and always follow it.
9. Honor roll. Roll of honor for good attendance.
10. Fellowship. The school is a social unity and every person in it owes a duty. Think, feel and act so that no one can assume the right to be tardy.

The selection of memory gems is another matter that must be determined by the actual needs of the pupils. The platform given below has satisfied thousands of pupils. The use of the word platform invites a comparison or analogy: use civics and history in discussing party platforms.

Our Platform.

1. The only way to have a friend is to be one.—Emerson.
2. Be not simply good, be good for something.—Thoreau.
3. No one can disgrace us but ourselves.—J. G. Holland.

4. Heaven never helps the man who will not act.—Sophocles.
5. People do not lack strength; they lack will.—Victor Hugo.
6. It is well to think well; it is divine to act well.—Horace Mann.
7. Whatever is worth doing at all is worth doing well.—Chesterfield.
8. Things don't turn up in this world until somebody turns them up.—Garfield.
9. He that is good at making excuses is seldom good for anything else.—Franklin.
10. I hate to see things done by halves. If it be right, do it boldly; if it be wrong, leave it undone.—Gilpin.
11. The chains of habit are generally too small to be felt till they are too strong to be broken.—Samuel Johnson.
12. Our greatest glory consists not in never falling, but in rising every time we fall.—Goldsmith.
13. He that avoideth not small faults, by little and little falleth into greater.—Thomas a Kempis.
14. It requires a good strong man to say: "I was mistaken, and am sorry." A weak man hesitates and often fails to do the right thing.—Franklin.
15. Labor to keep alive in your breast that little spark of celestial fire called conscience.—Washington.
16. There are two freedoms—the false, where a man is free to do what he likes; the true, where a man is free to do what he ought.—Charles.Kingsley.
17. Let us have faith that right makes might, and, in that faith, let us to the end dare to do our duty as we understand it.—Lincoln.
18. Some temptations come to the industrious; but all temptations attack the idle.—C. H. Spurgeon.

19. Look not mournfully into the Past; it comes not back again. Wisely improve the Present; it is thine. Go forth to meet the shadowy Future, without fear, and with a manly heart.—Longfellow.

20. Lord of the Universe, shield us and guide us,
Trusting Thee always through shadow and sun!
Thou hast united us, who shall divide us?
Keep us, oh keep us, the Many in One.
—Oliver Wendell Holmes.

72. Grading.—The purpose of grading comprehends the welfare of the school, the teacher and the pupil. For the school, grading is required as a means of adjusting work in the organization or the system. For the teacher, grading establishes a limit for the scope of the teaching. For the pupil, grading is intended as adaptation so that a maximum of progress may be guaranteed. The defects to be avoided are too rapid advancement, tardy advancement, and rigid systems not permitting adaptation to the needs of the pupil.

73. Promotion.—Two aims in promotion are to advance pupils as rapidly as their attainments will permit, and to maintain a standard of approximate uniformity of attainment in the grade. Further consideration will be found in the next ten sections.

74. Class teaching.—In our elementary grades there is much discussion about the relative merits of individual and class teaching; about the effectiveness of group teaching; about the practical application of the Batavia plan and its usefulness in solving the difficulties of promotion; and, lastly, about the separation and the special methods of instructing defective children. This section is inserted here to direct the attention of teachers to these topics. During any recitation period, is the class taught as one unified grade capable of understanding the teacher's presentation? Or, must each class be divided into groups and each group taught separately? Or, must a certain amount of individual teaching be done? Take in-

dividual and class instruction, for instance, and you will find that some educators say that the one cannot exist without the other, and that there are no serious difficulties arising under either if the teacher satisfies the ordinary conditions of teaching. This is a suggestive topic for our students and we offer as a point of view that no matter how good the teaching may be, there will be some pupils who will present the necessity of individual instruction, either in or out of class.

75. Group teaching.—Group teaching is not new, although it is so considered by some educators. It means nothing more than dividing the class into groups, according to ability, so that three groups, for example, shall be working on three respective kinds of assignment at the same time during one period. The teacher may be giving oral instruction to one group, while the other two are engaged in written exercises. This plan promotes adaptation of matter to the needs of the pupils, and so it becomes only a special illustration of one of the many characteristics of good teaching.

The arguments in favor of the group system are summarized by Dr. Maxwell:

1. It is now in general use in other cities—a strong presumption in its favor.
2. A teacher having, say, only 15 pupils out of 45 recite to her at one time is better able to distinguish the individual peculiarities of each pupil.
3. The teacher being compelled to divide the recitation for each subject into three periods is constrained to conduct the recitation in a vigorous manner. She is forced to avoid the two most serious errors into which teachers fall in the conduct of a recitation: requiring children to recite verbatim, and talking too much themselves.
4. Each pupil has abundant time in which to study in school. Complaints of overwork and exces-

sive home study have practically disappeared wherever the group system is adopted.

5. The pupil learns not only to study, but to inhibit and concentrate his attention—an invaluable experience for practical life.

6. A pupil may be promoted just as fast or just as slowly as he ought to advance. A pupil may be advanced from one group to another group within a grade; or promoted from one grade to another at any time in the term, without skipping any essential part of the work.

One division should always be composed of pupils advancing more rapidly than those in the other, so that the teacher will not be compelled to repeat the same lesson on the same day.

The difficulty is to find profitable employment for the section or sections not having the oral lessons. Many teachers cannot teach unless every child's eyes are fixed on them. They cannot see that more than a minute of this kind of so-called attention is bad for the child. Some teachers find the system hard because they give three-fourths of their attention to the groups not reciting, trying to keep them "in order" and not realizing that more freedom should be allowed children who are working by themselves as individuals. Some teachers believe that we divide classes only because the children have different attainments. They do not understand that we divide classes in order that the nervous strain on the children may be lessened, that they may feel that they are individuals, that they must not waste their time waiting for fifty to get a chance to read aloud or to spell or to compute, and that they may have time to study.

76. Individual teaching.—No matter what devices or methods or novelties may be advocated, the process of true teaching remains a personal relation between the teacher and individual pupils. The most successful class or group teaching is that in which the individuals in the class or group are able to put their minds into sympathetic communication with the teacher's mind, or vice versa. When the successful pupils have passed along with the satisfaction of a good degree of mastery, slow or defective pupils remain for individual teaching to give them the right of promotion. When any pupil fails to understand the instruction, when disorder interferes with the smooth course of teaching, when illness or other valid excuse causes absence, then there must be a personal meeting of the minds of teacher and pupil to restore conditions to a normal standard of efficiency. So under all circumstances it is safe to argue that individual teaching is the largest factor in the school education.

77. The Batavia plan.—The Batavia plan derives its name from Batavia, N. Y., where it was devised and put into successful operation by Superintendent John Kennedy. This plan of teaching combines the best features of class instruction, group teaching, and individual teaching. The classes are divided into groups according to ability and two teachers are at work at the same time in the same room. One teacher is carrying on the regular work of the grade with the larger part of the class, while the additional teacher is instructing one or more of the backward pupils. As soon as any pupil is capable of doing the next grade work, a promotion is made no matter what time of the term it may be. This plan of promotion is used all through the elementary schools, and it is found that most of the defects in the ordinary systems of grading and promotion have been overcome in the schools of Batavia. Attention is directed to the special value of the individual instruction under the Batavia plan. For further discussion, see page 153 in McEvoy's Science of Education.

78. **Examinations.**—This topic relates to the examination of pupils although there is equal interest in the nature of examinations prescribed for teachers. For those who are interested in the latter phase of this topic we refer to pages 113-120 in McEvoy's Science of Education. A point of view for considering the examination of pupils may be clearly presented in the form of an outline.

I. Methods of conducting examinations.
   1. By written tests.
   2. By oral tests.
   3. By combination of 1 and 2.

II. Advantages of written tests.
   1. Self-realization, independence.
   2. Habits of industry in preparation.
   3. Basis of comparative valuation from time to time.
   4. Apperception, composition, correlation.

III. Disadvantages of written tests.
   1. Not an accurate index of psychical progress. Other conditions--nervousness, lack of facility in expression, etc.—are too strong.
   2. Too much time required from pupils and, later, from teachers.
   3. Cramming.
   4. Mental deceit: words vs. content.

IV. Advantages of oral examinations.
   1. Time saved.
   2. Personality of pupil and teacher united—real teaching.
   3. Practical preparation for life. Oral expression, prompt decision, co-ordination of mental powers. *Habit.*
   4. Attention and interest.
   5. Adapted to individual needs.

V. Disadvantages of oral examinations.
   1. Time lost unless teacher is apt.

2. Effects are transitory.
3. Tends to guessing.
4. Does not sustain class concentration.

79. Reviews.—The lack of systematic and thorough reviews is one of the most serious defects in modern education. In their anxiety to cover the prescribed work, teachers devote most of the time to the presentation of new matter and then pupils are expected to do the extra review and drill work outside of the recitation period. A safer plan is to devote at least two-thirds of the school time to drill or review work; the other one-third will be sufficient for presenting the advanced lessons. The general characteristics of reviews may be considered under the headings in the outlines given in the last section.

80. Home lessons.—It is said that there are five institutional factors in education: the home, the school, the church, the state, and the vocation. The effort to make the home and the school harmonize in relation to lessons assigned in school to be mastered at home, is one unsettled problem in elementary and high school work. Many parents object to the assignment of home work on the grounds (a) that it is shifting responsibility from the teacher to the parent, and (b) that overwork is likely to produce fatigue. The teachers, on the other hand, answer (a) that the school hours do not give time to cover the required work, and (b) that the habit of independent work is essential in the education of the pupil. For convenience in presenting a liberal view, both affirmative and negative, an outline is submitted.

I. Advantages.
   1. Habits: obedience, industry, self-activity.
   2. Criterion: honest work is an index of pupil's power.
   3. Co-operation: parents become interested.
   4. Review: valuable impression and expression of recitation work.
   5. Protection: keeps pupils at home.

II. Disadvantages.

1. Habits: incorrect work bad in effect.
2. Not a criterion: too much dishonesty.
3. Friction: some parents disapprove.
4. Fatigue: due to overpressure.
5. Recreation: pupils need outdoor exercise.

81. Questioning.—The attempt to classify questions under the headings *development*, *drill*, *review*, *examination*, *etc.* is putting considerable value upon external form again. There are differences, of course, but the tactful teacher may use all these kinds of questions in any one lesson, even though the lesson is strictly a development lesson. If sound methods of teaching must always depend upon three factors—teacher, lesson, pupil—then sound questioning depends upon these same three factors, and the teacher will adapt the questions to the needs of the children.

A few rules for questioning will not be out of place. They may be stated as positive or negative rules.

I. Positive rules.

1. Questions should be adapted to the powers of the pupils.
2. The wording of the question should be simple, clear, specific. This rule is opposed to puzzles, vague questions, double questions, universal questions.
3. The order of the questions should be determined by the law of successive clearness. Questions logically arranged are not always suited to the child's mind. Question to promote progressive clearness in the child's thinking.
4. Make the question as short as clearness will permit.
5. Question to impress what the children know, not what they don't know.

II. Negative rules.
   1. Do not end a question with what.
   2. Do not ask questions that allow a choice of answers.
   3. As a general rule, do not ask questions that can be answered by yes or no.
   4. Do not ask a question that suggests the answer.
   5. Do not abuse the use of personal pronouns in questions.

III. Weak questioning. Some questions to be avoided may illustrate the rules under I and II.
   1. Vague questions. How was the battle of Gettysburg fought?
   2. General questions. What do you think I saw on my way to school?
   3. Obscure questions. Can you comprehend the complexity of civilization?
   4. Double questions. Where was Taft born and what service did he render in the Philippines?
   5. Universal questions, similar to general questions. Where is London?
   6. Involved questions. Considering the facts in the Missouri Compromise, can you, a student of modern civic problems, trace the results in relation to the principal causes?
   7. Direct questions. Was Burgoyne successful at Saratoga?

Three general classes of questions are frequently called for on examinations, namely, consecutive, promiscuous and simultaneous. Consecutive questioning follows the order of seating or roll; promiscuous questioning calls on individuals not in the order of seating or roll; simultaneous questions are directed to the whole class, usually for concert answers. For advantages and disadvantages, see 523.

The difference between development questions and review questions is another examination topic. Development ques-

tions require more time in asking and answering; the order is generally logical; the answers are in complete statements. Review questions are rapid; not necessarily in logical order; answers may be brief.

82. **Answers.**—The kind of answers given by pupils will depend largely upon the nature of the questions asked by the teacher. When all the conditions are adjusted to insure a fair amount of effort, the answers are indication of intellectual progress. We shall discuss this topic under four headings.

1. The educational value of answers. The test can be found in the methods of mind training treated in Chapter IV. A good answer is evidence of clear percepts, serviceable memory, good concepts and some application of judgment and reasoning. Furthermore, a good answer is evidence of attention; it may indicate interest; it must utilize apperception; and it requires self-activity. One good answer is the beginning of habituation. Other good answers will, of course, tend to fix desirable habits of mental activity.

2. Characteristics of good answers. From what has just been said it is evident that a good answer requires the child to do some thinking. He must think to get a correct interpretation of the teacher's question and he must think again to furnish material for his own answer. Then follows another quality, namely, the use of good language in clearly expressing the answer.

3. What answers should be received. First, the good answers just characterized; second, answers which are partially correct providing there can be a division made in the answer required. This view is the one that gives

credit for all that the pupil is able to do. The third kind of answer to be accepted is the one that is evidence of fidelity on the part of the pupil. The answer may not be correct but the effort to make a correct answer deserves some commendation. Strictly speaking, a correct answer is the only one that can receive full credit in the recitation, but as the process of teaching does not expect a satisfactory answer to every question, it is suggested that the other two kinds of answers receive some credit as the means of encouraging the pupils.

4. What answers should be rejected. Dishonest answers, guesses and careless answers should not be accepted. They may satisfy certain standards of marking but they are not educative. Dishonesty may be due to laziness; or it may be a kind of unconscious development in schools where per cents have been used as the goal of education. In all these cases, require the pupil to work toward the desired answers. This is the only positive cure. A negative treatment may place a zero upon the register, but a zero does little or nothing to direct the average pupil into habits of useful effort.

83. Moral education.—Sections 83 to 94 inclusive are taken verbatim from the 1905 course of study for new York City.

"It should be the aim of teachers and principals to make the life of the school, in every activity and relation, count for moral education. This aim should vitally affect not only the teaching of every subject and the treatment of every problem of discipline and training, but also the general atmosphere and spirit of the classroom and of the school. In working toward this aim, the following suggestions will be found helpful:

84. **Personality of teacher.**—The personality of the teacher is at the root of all moral education in the school. The teacher's voice, speech, bearing, and dress; the teacher's poise, self-control, courtesy, kindness; the teacher's sincerity, ideals, and attitude toward life, are invariably reflected in the character of his pupils.

85. **Reverence.**—Reverence is vital to morality. Whatever quickens in children the feeling of dependence on a Higher Power; whatever leads them devoutly to wonder at the order, beauty, or mystery of the universe; whatever arouses in them the sentiment of worship or fills them with admiration of true greatness, promotes reverence. There is no subject studied in school which, reverently taught, may not yield its contribution to this sentiment.

86. **Self-respect.**—Self-respect, which is also fundamental to moral development, is engendered in a child when he does his best at tasks that are worth while and within his power to do well, with proper recognition by teacher and schoolfellows of work well done.

87. **Principle in character.**—The cornerstone of a self-respecting character is principle—the will to be true to the right because it is right, whatever the consequences, to act 'with firmness in the right as God gives us to see the right.' The essential difference between principle and mere self-interest should be vividly brought home to each child.

88. **Spirit of school.**—The spirit of the classroom and of the school—the spirit that makes children say with pride 'my class' and 'our school'—is one of the strongest of moral forces. Where there exists a proper *esprit de corps*, the problem of discipline is largely solved. Public opinion as a moral force should be moulded and utilized in every school.

89. **Social membership.**—The child should early gain the idea of social membership. The truth that co-operation and unselfishness are essential to true social living should be made real and vital. This truth is brought home through 'group

work' where the work of each is necessary to the work of all; and through the feeling in a school or class that the honor of all is in the keeping of each.

The child should also learn that he is a member, not only of the school, but of the family, of the neighborhood, of the city, and of the state and nation. What it means to be a loyal member of these social institutions should be made clear. The naturalness and the necessity of obedience and of helpfulness should be shown. The moral aspect of home tasks, and of working with the departments of health, parks, street cleaning, police, and education, and not against them, should be enforced by concrete applications. In general, the truth should be impressed that without loyal and effective social membership no individual can lead a complete life.

90. Self-government.—No person has a fully developed moral character until there has been a transfer of the seat of authority from without to within himself; a moral man obeys himself. Each child in every grade should be steadily helped towards self-direction and self-government. Effective means to this end are: appeals to initiative and resourcefulness; the development of such a sense of honor as will preserve order without surveillance; and some form of organization designed to quicken and exercise the sense of responsibility. To trust a child tends to make him trustworthy. A system of pupil self-government, if wisely applied and not encumbered with unnecessary machinery, may be found effective. The form, however, of the organization is immaterial. The essential point is that the teacher, himself a member of the community, should make his pupils sharers to a certain extent in the problems arising out of their community life; and that he should entrust to them as members in their own right of the social body the performance of certain functions. Such training in social activity is effective training for citizenship. Under such conditions 'good order' will mean not so much the refraining from disorder as the condition of effective co-operation.

91. Moral values of studies.—Each school study has a specific moral value. Literature and history embody in concrete form moral facts and principles, showing to the child his own self 'writ large,' furnishing him with ideals and incentives, and moulding his moral judgment; and they will accomplish these results the more surely as the teacher is himself moved by that which is presented. Every subject involving observation and expression is essentially moral. Every subject, therefore, should be so taught as to make for truth-telling in word and act, and for training in self-expression.

92. Contemporary civilization.—In connection with the regular studies of the school, such aspects of contemporary civilization as are of value for developing the social spirit should receive attention. Hospitals, societies for the prevention of cruelty to children and to animals, homes for orphans and for the aged and infirm, fresh air funds, and similar agencies for social service should be brought within the child's comprehension as opportunity offers. Deeds of heroism and self-sacrifice done by firemen, policemen, soldiers, and other persons, should be presented and commended. The truth that success in life means more than mere money-getting can thus be brought home again and again. The contemplation of deeds of cruelty, dishonor, and shame has a necessary, though subordinate, place in moulding moral taste.

93. Topics for moral lessons.—The following list of topics affords subjects for many practical lessons in morals and manners:

1. Duties to parents, brothers, sisters, and playmates; to servants and other employees; to employers and all in authority; to the aged, the poor, and the unfortunate.
2. Conduct at home, at the table, at school, on the street, in public assemblies and in public conveyances.

3. The common virtues, such as regularity, punctuality, self-control, cheerfulness, neatness, purity, temperance, honesty, truthfulness, obedience, industry, and patriotism.

94. Principles of moral instruction.—In all such moral instruction and guidance the following principles should be observed:

1. The course of moral training is a development, in which the child is first led to act rightly and afterward to work from principle; he proceeds from obedience on faith to obedience on principle; from regularity to faithfulness. The child also develops from egoism to altruism. His impulse toward self-interest normally develops earlier than his impulse to put himself in another's place. Upon the full development of the former stage depends the full development of the latter.
2. The culture of the imagination is a powerful aid in moral instruction; first, as the power vividly to picture consequences—to put yourself in your own place later on (foresight); secondly, as the power to 'put yourself in his place' (social imagination, sympathy).
3. In using literature and similar material for purposes of moral education, the teacher should not violate the law of self-activity. The child may resent having a moral drawn for him which he can draw for himself. He is the more likely to follow the principle which he himself discovers or formulates because it is his own.
4. The most effective method in moral education is positive rather than negative. A mind filled with worthy interests, high ideals, and helpful activities has no room for evil. Approbation more than censure leads to well doing. Love is a stronger and a better motive than fear.

5. At every stage of school life pupils should be taught that they live under inexorable laws which they cannot violate with impunity—both physical laws and moral laws. Obedience is not optional: it is compulsory. Penalty follows law-breaking as surely as night follows day, though the penalty is not always immediate."

95. **Discipline.**—Discipline in school management has reference to mental, moral and physical training that tends to secure the self-control of individuals. The general use of the term discipline in regard to human faculties means training that enables a faculty to do more efficient work than it would have been able to accomplish without the discipline. So in a larger sense disciplinary school management aims to develop all the useful characteristics of good citizenship.

96. **Authority.**—There are writers and teachers who hold that respect for authority is not an American ideal. We do not agree. Constituted authority, wherever it may be, deserves constant recognition and respectful obedience. Authority is not tyranny; it is a natural and necessary guarantee of order in moral, religious and civil life. The largest development of individual freedom is impossible without some accepted standard of authority. Pupils should be taught, then, that it is their duty to respect and obey the authority in the school, in the home, and in the community.

97. **Co-operation of parents.**—In another section of this chapter, we have spoken of the five institutional factors in education. One aim of ideal training must always be to get those five factors into harmonious co-operation. It is not always possible to secure such assistance outside of the home, but it is possible to bring the parents into close touch with the actual needs of the school. This may be done by correspondence if it is not convenient to have personal consultations in the homes of the pupils. A visit has many advantages over correspondence

because it is possible for pupils, teachers and parents to meet in common and establish a balance of opinions relating to the favorable and the unfavorable work in the school. A third means of getting into touch with parents is patriotic exercises or other school entertainments. The natural interest in the welfare of the pupils on such occasions is the strongest inducement to parents to present themselves at the place where the entertainment is held. Other means of becoming acquainted are found in churches, local societies, and other established means of social intercourse in the community.

98. Punishment defined.—Punishment is a penalty for the violation of the rules of order. The old idea of punishment embodied the necessity of giving the pupils an equivalent for the wrong that had been done. The modern view of punishment looks to the reform of the pupils through the cultivation of desirable habits of activity.

99. Kinds of punishment.—Corporal punishment is forbidden in most of the schools and so it is necessary for the teacher to find some substitute that possesses deterrent and corrective merits. The following are approved:

1. Detention. The practice of keeping pupils in the schoolroom at recess, during part of the noon or after school, has the approval of many educators although it is severely condemned by others. The loss of pleasure seems to be the basis of the punishment. One serious objection to detention is on the physical side. If the pupils were allowed the privileges of physical exercise during the recess periods, it is probable that some of the sources of disorder would find a natural outlet in the games. The pupil who is detained is not likely to be in a frame of mind suitable for continuing the work of the day after his companions return to the classroom. For these reasons detention cannot be widely approved as a form of punishment.

2. Assignment of extra tasks. The aim of this kind of punishment seems to be the development of intellectual power through the extra work. It is implied that the mental training will ultimately direct the child into points of view that will cause him to desist from further wrongdoing. On the other hand, the imposition to extra school work is likely to lead the the child to dislike that kind of work and also to form habits of carelessness in performing the assignment.
3. Demerit marks. This penalty assumes that pupils are ambitious to secure high standings as an indication of proficiency. Some pupils do have such ambitions but their ambitions are easily crushed as soon as one demerit mark appears upon the record. Other pupils care nothing for marks of that kind and so the punishment is wholly external and has little or no effect upon them.
4. Expulsion.—This should be used only as an extreme means of settling the difficulty. Expulsion is justified only when the pupil reaches a state of rebellion which cannot be treated without an injury to the class or to the school. Then it is considered prudent to remove the pupil from the presence of his companions. An adverse view of expulsion lies in the fact that the child expelled is to be at liberty in the community and his idleness is likely to lead to the development of bad habits. The relation of idleness and crime shows the futility of expulsion as a form of punishment in any community.

100. Incentives.—The ordinary incentives are marks for scholarship or conduct, prizes, decorations, school privileges,

and public commendation. Some of these are forbidden in certain school systems because of the difficulty in doing justice in selecting the best pupils, or because such distinction tends to develop egotism and selfishness in place of altruistic virtues. These incentives are called artificial.

In contrast to the artificial incentives are the natural incentives. The latter are respect for teacher, respect of class, school spirit, sharing school privileges, and personal satisfaction in doing one's duty. These are natural because they are human. Each incentive develops a stronger feeling between the pupil and some other member of the school. The benefit is the consciousness of personal power growing out of self-activity. Notice how the community interest promotes attention, interest and activity.

101. Self-government of pupils.—All education aims at self-government of the pupils. The specific use of the word here relates to the various forms of pupil government, in which the pupils themselves participate in the legislative, the executive and the judicial departments of school organization. In each system of this kind, the government is a republic. The School City and the School State are common forms. The former is discussed on pages 157 to 161 in McEvoy's Science of Education.

102. Public opinion in school.—Disorder in school is sure to arise if confidence is not established in the motives of the teacher and of the pupils. It is a mistake for a teacher to think that a large number of pupils like to do wrong; and it is unfortunate for pupils if they cannot consider their teacher a friend. The establishment of mutual confidence, the pleasure of morning exercises, the satisfaction of success in the studies, the interest in rhetorical exercises, and the fellowship of the school grounds and the afternoon walks,—all these will tend to develop a healthy public opinion in school.

103. Evils.—Such school evils as carelessness, laziness, tardiness, truancy, whispering, lying, cheating, stealing,

impudence and rebellion should be displaced by desirable habits. Repression is only a temporary suspense; substitution is the sound process.

104. Virtues.—The desirable habits to be substituted in section 103 are accuracy, industry, neatness, politeness, truthfulness, honesty, justice, punctuality, co-operation, and obedience. The substitution is a matter of gradual habituation.

105. Affiliated interests.—In speaking of natural incentives in 100, we referred to the sharing of school privileges. Such privileges are found in the affiliated interests which serve as useful means of education in addition to the work of the recitation. The various athletic interests, the debating clubs, the school paper, the musical and dramatic associations and the alumni associations are all helpful in keeping a strong school spirit.

106. Adolescence.—Independence is a mental characteristic of adolescents. Management during this period is guidance. Follow these suggestions:

1. Environment must be adapted to pupil rather than vice versa.
2. Physical health is a predominant consideration.
3. Pupils need direction and inspiration rather than ponderous knowledge.

Adolescence is treated in Science of Education, pp. 92 to 105.

107. Fatigue.—During adolescence growth is so rapid that strength is not constant. In younger children, fatigue is produced by other causes. So far as fatigue relates to management, it shows the necessity for finding and removing physical causes of disorder. For general relation to education, see Science of Education, 339, 353-364.

108. Devices in management.

I. Use quotations. See Our Platform, section 71.

II. Ask pupil to write an opinion of his own case. Furnish two or three questions to guide him. Assign to be done at home. This causes introspection.

III. Have pupils write a letter of advice to themselves. They will unconsciously expose their own weaknesses. This aid will show what treatment is best.

IV. Teachers and pupils need to understand one another. An effort in this line, some years ago, secured the written opinions of teachers, pupils and supervisors. Here we give the teachers' opinions of the pupils ; in V, the pupils' opinions of the teachers; and in VI, the critics' suggestions.

Two kinds of obstacles are found, those in the pupils and those in the teachers. First, note the difficulties in the pupils.

1. Inattention but not positive disorder.
2. Lack of enthusiasm and ambition.
3. Failure to hand in work on time.
4. Lack of knowledge of how to study without aid.
5. Talking without permission, restlessness, asking unnecessary questions.
6. Inaccuracy in operation; lack of knowledge of work passed over.
7. Laziness, slovenly work, lack of thoroughness, too easily satisfied.
8. Feeling that teachers are only practicing on them.
9. Desire for something new. Nothing appears original to them.
10. "Lack of power to do independent thinking. They want some one to develop everything, and they cannot understand a question if it is

put in a different form from that to which they are accustomed."

Many teachers found the greatest obstacles in themselves, and so they administered self-criticism in a spirit of fairness and frankness. Following are their points of weakness:

1. Lack of self-confidence and self-control.
2. Talking too loud and thereby giving a cause for restlessness.
3. Inability to think while standing before the class.
4. Cannot become acquainted with pupils in so short a time.
5. Inability to locate source of disorder; difficulty in deciding what to do when disorder arises.
6. Difficulty in securing attention.
7. Lack of decision and determination and consequent failure to make pupils obey promptly.
8. Too easily discouraged when practice does not harmonize with theory.
9. Failure to satisfy the children's needs on account of not understanding the condition of the pupils' minds.

V. The pupils' opinions.

1. The discipline of the school depends upon how the teacher acts the first day. The pupils will try her to see how much she will stand. If she does not have order the first day, I fear she never will. Some teachers never smile, and they are the kind the pupils don't like.
2. Some teachers don't inspire confidence in the pupils, and some try to show their authority too much.
3. Many pupils do not realize their responsibility in their school life.
4. If some teachers would act more and talk less there would be better discipline.

5. A teacher may be pleasant and strict at the same time.
6. Some teachers will hardly speak to their pupils outside of class.
7. Some teachers do not win the respect of the pupils, and so the pupils do not honor them.
8. Some teachers are too cross and so the pupils become restless; other teachers are not cross enough.
9. The teachers do not study the pupils enough to know how to manage them.
10. Some teachers do not have self-government,—they laugh too much. Others lose their temper too often.
11. Many teachers think that if part of the class is paying attention they will not take time to speak to the others.
12. If they keep a pupil after school, they suffer as much as the pupil does.
13. The recitations drag, making the lesson uninteresting; and if the pupils do not give their attention to the lesson, they *do* give it to something else.
14. Do not show the pupil that you are afraid of him.
15. Do not allow pupils to talk back.
16. One teacher is always making threats that if we do such-and-such a thing she will do so-and-so; but she never keeps her promise and therefore we do not pay any attention to her. She said she would mark off 25 per cent the next time we whispered, and when the time came she said, "You remember what I told you." Of course we remembered.
17. Some pupils do not care to have school go pleasantly. I notice if one pupil sets a good example, the rest generally follow.

18. No two pupils have dispositions alike, and therefore it is hard for the teacher to manage the whole class.

VI. The critics' suggestions.

1. Make the work interesting.
2. Personal enthusiasm.
3. Study with pupils to show them how to prepare their lessons.
4. Assign special work to pupils who do not give their best effort.
5. Act more quickly and see all that is going on.
6. Use thought questions.
7. Give extra help to weak pupils and personal attention to disorderly ones.

Chapter VII. Methods of Teaching.

109. Definition.—Method is an orderly procedure in education. This procedure is determined by the capacities of the pupils, by the subject-matter, and by the teacher. Methods include all plans and devices that tend to satisfy the principles of education.

110. Classification.—Most writers wish to classify methods according to (1) subject-matter, (2) the learner, (3) the teacher. We shall do so to avoid confusion, but students should remember that all three of these factors must be considered in determining sound methods.

I. FROM VIEW POINT OF TEACHER.

111. Conversational method.—This method is a natural intercourse between teachers and pupils. While its use is generally restricted to lower primary grades, it may be used in higher work. Its success depends largely upon the personality of the teacher. Speaking in ordinary tones is an indication of natural poise, and pupils will gladly adapt themselves to similar phases of thinking and doing. It is a method that inspires confidence, invites co-operation, and makes the educative process a matter of personal communication between teacher and pupil. It was the method of Pestalozzi, Froebel, and Col. Parker. Sometimes called a dialogue method.

112. Development method.—This is another dialogue method whose use extends over the whole field of education. It is especially adapted to early information lessons which aim at clear concepts and easy expression. Its aim is to develop right habits of thinking; and by the use of suitable material, the child's interest is aroused so that the matter, the method and the result have educative value. A further study of methods will show that this method really includes many

others, such as, particular to general, known to related unknown, inductive-deductive, etc. You will see that these methods shade into one another; they are not so many distinct methods.

Caution.—Do not try to develop everything. If pupils give you the answer before you are half way along in your place of development, don't deaden their interest or waste your time by completing the developing process on that lesson.

113. Lecture method.—This is useful in intermediate and higher grades, especially where the matter is brought up for discussion and other reproduction in succeeding recitations. A kind of lecture or monologue method is required in all primary classes before text-books are introduced. Narration, description, explanation and definition are given by the teacher as models for imitation and reproduction. But let it be understood that the lecture method, strictly interpreted as a lecture, is suited only to mature minds.

114. Questioning method.—This method may form a part of any other method or it may be used alone, chiefly for the purpose of examination. For further discussion see 81.

115. Socratic method.—This method is a specific kind of questioning. As used by Socrates, it was conversational in tone. He elicited statements from others by two kinds of questions: one to convince of error; the other to develop truth. Socrates was questioning the Sophists who assumed to be masters of all knowledge and so the first part of the Socratic process was destructive and ironical. Its purpose was to overthrow and ridicule the wrong opinion held by the pupil. The second part of the process was directing the mind by its own activity toward the truth, and preparing the mind to recognize and accept the truth.

Value.—The Socratic method accepts the pupil's point of view in thought and language; it keeps within the scope of the pupil's comprehension; every movement in thought necessitates self-activity of the pupil; it leads into a discovery of new view-

point, but it does not tell; it leaves the pupil at the threshold of truth but does not force him to accept it. It is conviction through directed activity. Sometimes called maieutic, i. e., giving birth to ideas.

Caution.—Irony cannot be safely used in teaching. Encouragement, not sarcasm, is what the average pupil needs.

Limitations.—The Socratic method is adapted to all knowledge in which the pupil's experience is sufficient to enable him to reach the truth. Beyond this limit, it is not useful.

116. Illustration of Socratic questioning in grammar.—Take a familiar answer in sixth grade grammar, using this sentence: Lincoln was very kind to children. Teacher asks a class to tell part of speech of every word in the sentence. A pupil says very is an adjective.

T. You say very is an adjective.
P. Yes, very is an adjective.
T. Why do you call very an adjective?
P. Because very modifies an adjective.
T. What adjective does very modify?
P. Very modifies the adjective kind.
T. You have told me the use of the word very. After finding the use what led you to say adjective?
P. I thought of the definition of an adjective.
T. Give that definition.
P. Anything that modifies a noun or a pronoun is an adjective.
T. What noun or pronoun does very modify?
P. No noun or pronoun. Kind is an adjective.
T. Now, what is your conclusion?
P. Very is not an adjective.
T. Then what part of speech is it?
P. Anything that modifies an adjective must be an adverb; hence, very is an adverb.

117. Illustration in mathematics.—Another illustration of the Socratic method is found in Plato's Dialogues, Jowett's trans-

lation. Meno, a disciple of Socrates, has criticised Socrates for the negative character of Socratic instruction.

"Why, Socrates," said Meno, "you remind me of that broad sea-fish called the torpedo, which produces a numbness in the person who approaches and touches it. For, in truth, I seem benumbed both in mind and mouth, and know not what to reply to you, and yet I have often spoken on this subject with great fluency and success."

In reply Socrates applies his teaching by giving a lesson to a boy who is an illiterate slave.

Soc. "Tell me, boy, do you know that a figure like this is a square?

Boy. I do.

Soc. And do you know that a square figure has these four lines equal?

Boy. Certainly.

Soc. And these lines which I have drawn through the middle of the square are also equal?

Boy. Yes.

Soc. A square may be of any size?

Boy. Certainly.

Soc. And if one side of the square be of two feet and the other side be of two feet, how much will the whole be? Let me explain: If in one direction, the space was of two feet and in the other of one foot, the whole would be of two feet taken once?

Boy. Yes.

Soc. But since this side is also of two feet, there are twice two feet?

Boy. There are.

Soc. Then the square is of twice two feet?

Boy. Yes.

Soc. And how many are twice two feet? Count and tell me.

Boy. Four, Socrates.

Soc. And might there not be another square twice as large as this, and having, like this, the lines equal?

Boy. Yes.

Soc. And of how many feet will that be?

Boy. Of eight feet.

Soc. And now try and tell me the length of the line which forms the side of that double square: this is two feet—what will that be?

Boy. Clearly, Socrates, that will be double.

Soc. Do you observe, Meno, that I am not teaching the boy anything, but only asking him questions; and now he fancies that he knows how long a line is necessary in order to produce a figure of eight square feet; does he not?

Men. Yes.

Soc. And does he really know?

Men. Certainly not.

Soc. He only guesses that because the square is double, the line is double.

Men. True.

Soc. Observe him while he recalls the steps in regular order.

(To the boy) Tell me, boy, do you assert that a double space comes from a double line? Remember that I am not speaking of an oblong but of a square, and of a square twice the size of this one,—that is to say, of eight feet, and I want to know whether you still say that a double square comes from a double line?

Boy. Yes.

Soc. But does not the line become doubled if we add another such line here?

Boy. Certainly.

Soc. And four such lines will make a space containing eight feet?

Boy. Yes.

Soc. Let us describe such a figure; is not that what you would say is the figure of eight feet?

Boy. Yes.

Soc. And are there not these four divisions in the figure, each of which is equal to the figure of four feet?

Boy. True.

Soc. And is not that four times four?

Boy. Certainly.

Soc. And four times is not double?

Boy. No, indeed.

Soc. But how much?

Boy. Four times as much.

Soc. Then the line which forms the side of the square of eight feet ought to be more than this line of two feet and less than the other of four feet?

Boy. It ought.

Soc. Try and see if you can tell me how much it will be.

Boy. Three feet.

Soc. How much are three times three feet?

Boy. Nine.

Soc. And how much is the double of four?

Boy. Eight.

Soc. Then the figure of eight is not made out of a line of three?

Boy. No.

Soc. But from what line? Tell me exactly, and if you would rather not reckon, point out the line.

Boy. Indeed, Socrates, I do not know.

Soc. Do you see, Meno, what advances he has made in his power of recollection? He did not know at first, and he does not know now, what is the side of a figure of eight feet; but then he thought that he knew and answered confidently, as if

he knew and had no difficulties; but now he has a difficulty, and neither knows nor fancies that he knows."

II. FROM VIEWPOINT OF PUPIL.

118. From the particular to the general.—It is a chief business of education to pass from distinctly perceived individual notions to clear general notions.—Pestalozzi. Individual notions are notions or ideas of individual things. Each of the five senses furnishes sensations which the mind may or may not accept. As soon as the mind considers a sensation by examining the object that caused the sensation, the mind gains a percept of that object. This percept may be considered a particular or individual notion. Then the memory and the imagination work on these percepts until the mind combines the percepts into a concept or general notion.

In all early education the teacher strives to train the senses to see things, to observe things, so that the mind may get clear, accurate percepts as the foundation of knowledge. Concrete material in teaching is useful because the pupils can use more than one sense in observation.

Illustration.—To teach the definition of a noun, write sentences on the board.

Longfellow was a poet.
Pupils like poems.
Lincoln loved children.
Do you know nouns?

The presentation will lead pupils to see that each name word in these sentences is a noun; and so from seeing particular name words are nouns, they infer that in general name words are nouns. So this inductive lesson proceeds from the particular to the general. The same process is found in all elementary development lessons.

119. Simple to complex.—The meaning of these words varies as individuals vary. We must take each child's point of view. What is simple for the teacher may be complex for the pupil.

1. In language work, the simple things are the things the child knows. Talk about toys, pets, experience. Use short, simple, familiar words.
2. In learning numbers, the process of scoring is a simple way of indicating a knowledge of the number concept, thus: 11 for 2 or two; 111 for 3 or three.
3. The simple sentence is mastered before the compound or the complex.
4. In music the natural scale is taught first.
5. In nature study the plant as a whole is studied as one single, simple, living thing. Later the child will become familiar with the complex structure of the plant and the functions of its various parts.

120. **Concrete to abstract.**—The abstract concepts cannot be formed without first having a concrete concept. Thus, an abstract concept of whiteness comes after associating whiteness with a number of white objects. Another reason for using objective or concrete teaching is the demand for multiple sense instruction. Seeing, hearing, feeling, and even tasting and smelling may be employed.

1. Alphabet blocks as play in education.
2. Warlike toys for Spartan children.
3. Foot-rule and yard-stick in linear measure; gill, pint, quart and gallon measures in liquid measure; ratio and proportion by handling blocks in Speer method.
4. Moulding-board, putty maps, relief forms and pictures in geography.
5. The study of a model to get form, style and rules in composition.

121. **From the known to the related unknown.**—A child is master of considerable knowledge when he enters school. This knowledge in possession must be used as apperceiving

groups as a basis for new knowledge. The adaptation of the old and the new will utilize interest and attention.

1. The schoolroom, the playground or the city may each or all be used in early lessons in geography. This plan illustrates from the particular to the general.
2. From knowing the agreement of subject and predicate, the child passes to concord of adjectives and nouns, pronouns and antecedent, etc.
3. Unity in a sentence is a foundation for unity in paragraph and essay.
4. Definition of a verb is necessary for an understanding of the participle, and the nature of nouns and adjectives leads to the secondary nature of participle.
5. The common denominator for addition of fractions opens a way to subtraction and division of fractions; and common fractions in general are a basis for decimals and percentage.

122. Observation before reasoning; processes before rules; facts before definitions or principles.—These axioms are a demand for inductive processes in teaching. They are justified by psychology because percepts precede concepts, and definitions require related classes. Discovery aids activity.

1. Window gardens are means of causing the child to discover the relation of light, heat and moisture to plant life.
2. Five or more examples worked in multiplication of decimals will lead to the rule.
3. Actual experiments with levers will quickly impress the rules regarding fulcrum, weight and power.
4. See also inductive method.

123. From the empirical to the rational.—"Science is organized knowledge; and before knowledge can be organized, some of

it must be possessed. Every study, therefore, should have a purely experimental introduction; and only after an ample fund of observations has been accumulated, should reasoning begin." (Spencer, Education, p. 93 of Kellogg's edition).

So this rule means that knowledge must be gained wholly by personal experience. It embodies all of the other preceding axioms. We admit that pupils should learn much by their own efforts, but all subject-matter cannot be mastered in this way. Some must be taken on the authority of the teacher, as the deductions in history, economics, and advanced mathematics and science. Our criticism is that the rule should not be absolute because all subjects do not admit personal experimentation.

124. Heuristic method.—This name is derived from a Greek word meaning to find; and so it is a method of directing instead of telling. By questions, directions, problems and suggestions the child is encouraged to find out everything for himself by discovery. It is a constructive method which aims to promote self-realization. It is the method of discovery under sympathetic and intelligent guidance.

Illustration. A class is beginning the study of Asia. Without any lecturing by teacher or reading by pupils, turn to the map of Asia. Each pupil has a geography. Take a general view of surface; location, direction and names of mountains. Next take drainage; rivers, running north, east and south; hence, three great slopes; highlands and lowlands contrasted and located. Coast line, peninsulas, harbors noted. Conditions affecting climate and the probable modifying elements. Probable occupations, productions and consequent states of civilization.

The second process is verification. Observation and inference in the first process beget lively interest and active thinking, and then the verification by consulting the printed pages completes the first period of study. Contrast the old memory exercise in studying Asia. See last two sections in chapter on geography.

125. Prussian method.—Hinsdale says that "teaching is bringing knowledge into due relation with the mind." In the effort to induce pupils to share willingly in all the activities of the school, the Prussian method puts the pupils and teacher under a feeling of equality in a kind of social participation. For instance, a lesson covers eight problems in arithmetic. All pupils are equipped for written work at desks. The teacher calls for the interpretation of the first problem, and several pupils in turn contribute their opinions. This arouses the social stimulus or the general feeling in favor of individual and class success. All begin the written solution; one is called to explain a step, another explains a second step, and so on. After reciting, each one continues his written work. So every step is explained in interpretation, solution and analysis; every pupil has shared in oral and written work; every problem has been solved and all the difficulties have been cleared away. The tone is conversational, the manner is natural, the work is interesting in process and results, and the spirit of a civic community has been experienced by all. This kind of education is living, and not a mere preparation for living.

126. Inductive method.—A process of reasoning which establishes a general rule, definition, principle or proposition based upon the knowledge of particular cases. In section 44 we explained briefly that the natural order in acquiring knowledge is percepts, concepts, judgments. This order is said to be the order of race development. Primitive man learned, through concrete and individual experiences, certain facts which he later formed into general conclusions. For example, flint is good material for arrow-heads. Such knowledge became a general possession and each generation added to the general fund of knowledge.

Illustrations. Solving several examples in division of fractions and then deriving the rule for inversion of the divisor; studying sentences containing relative pronoun and antecedent,

and then constructing a rule showing that the pronoun and antecedent need not agree in case; beginning the study of history at seven o'clock every school day for two weeks, and then noticing that the mind has formed a habit or rule of thinking about history daily at that hour.

127. Deductive method.—A process of reasoning that starts with general rule, definition, principle, or proposition and shows its respective application to particular cases. Thus in teaching grammar, have pupils learn definitions first and then apply them; in arithmetic, learn rule and then work examples; in geography, learn definitions of land forms and later look for illustrations.

128. The inductive-deductive method.—Neither induction nor deduction can alone constitute a suitable method in a complete act of instruction. The two must be combined. On account of this necessity, some writers mean inductive-deductive when they use the term inductive method. Let the student remember, then, to combine these two processes in every development lesson.

A second point to be remembered is that these two methods are justified by psychology; they satisfy the working of the mind. Teachers hear much about the action of the mind in passing from particular to general and then from general back to particular. In developing the definition of an adverb, the teaching emphasizes several adverbs in sentences. A knowledge of each adverb is a particular notion. Then the mind generalizes these particular notions and expresses the general notion in a definition of an adverb. But this does not complete the process; the impression is not deep enough. In other words, this definition must be applied to other adverbs in sentences, and pupils must construct sentences containing adverbs. This application or drill completes the educative process by passing from the general to other particulars. Thus the inductive-deductive method makes a complete mental act in every development lesson.

III. FROM VIEWPOINT OF SUBJECT-MATTER.

129. Analytic method. This method proceeds from wholes to parts. In grammar, begin with sentence and proceed to parts of sentence. In literature, study the whole selection before considering paragraphs, sentences and words. In primary reading, begin with sentence and go to words, letters and phonics. In nature study, observe the plant or other material as a whole before studying its parts.

130. Synthetic method.—The synthetic method proceeds from parts to wholes. In grammar, begin with words and build sentences. In primary reading, the building of phonic elements into words is synthesis. In primary geography begin with the schoolroom, having the children make a map of it and understand how a map represents an object; thence proceed to the school-yard, the street, the city and show upon the city and state maps all the children have themselves observed, including rivers, hills, mountains, etc.

131. Comparison of analysis and synthesis.—Both relate to the action of the mind in dealing with individual things and the parts of those things. Analysis seeks to show the relation between the parts; synthesis emphasizes the parts themselves and later shows their relation in construction. Synthesis embodies the guiding principles in most of the maxims treated under the pupils' point of view; the process is inductive. Analysis embodies the converse of those maxims; it is deductive.

132. Topical method.—Subject-matter may be divided so that each heading will include material for a unit of discussion. The ordinary division into chapters does not always suit the requirements for class assignment or for individual discussion. A topic should be complete in itself and yet be one of the related parts in a larger division.

The advantages of the topical method are convenience in assigning lessons, definite responsibility in recitation, and independence of pupil in thought and expression. The

disadvantage comes only from abuse in which facts are disconnected and class stimulus is sacrificed to individual achievement.

133. **Text-book method.**—This name was formerly given as a kind of reproach to teachers who followed the matter and method of the text-books. A reaction went to the other extreme of oral teaching. Now educators are trying to secure a reasonable average.

The abuse of the text-book method required verbal memory of the contents. The extreme oral teaching has made pupils dependent upon the teacher. Pupils have become passive on account of not knowing what to study, where to find it, and how to study.

Text-books should be used, and the prudence of teachers is a safe guide in avoiding extremes.

Chapter VIII. General Method.

134. Device, method, general method.—In the discussion of methods of teaching, there is not enough distinction between a mere device and a method. A device is a tactful presentation within the scope of method. It is generally personal, particular; it may or may not work well with another teacher under different circumstances. For instance, in teaching about a lock in a canal an ingenious teacher may have a wooden model made by himself or by a pupil. This is strictly a device, and a commendable one, but not properly a method although it is entitled to classification under objective or concrete methods of teaching. Again, a teacher makes a chart of figures covering the ordinary combinations for rapid drill. It is a good device, but it is not a method. Recall that method is a broad principle determined by the psychology of the pupils' minds, the personality of the teacher and the nature of the subject-matter.

We have described some of the methods which are useful in regular teaching. Now we come to consider whether there is one general method that is applicable in all teaching. If there is such a general method, it must be that there are general psychological laws applying to the development of all human beings. In accordance with Herbartian psychology, we think there are such laws and there is one general method.

135. Order of the mind.—"No matter what the study may be, whether Latin, mathematics, science, or some other, the mind follows a certain order. Through the old related experiences (first step, *preparation*) new individual notions are reached (second step, *presentation*); these are compared and their essential characteristics abstracted (third step, *comparison*), and the resulting general truth is worded (fourth step, *generalization*); this generalization finally receives application (fifth step, *application*)."

136. Apperception aided.—The order mentioned in the last paragraph embodies the formal steps of instruction. The steps grow out of Herbart's analysis of apperception; and so in following this order in presenting a lesson, the learner's mind is fitted for apperceiving the subject-matter.

137. Aims.—In writing lesson plans, it is always advisable to state the aim of the lesson first, although this law of aim is not one of the Herbartian steps. A few years ago teachers in training were told not to express the aim of the lesson for fear pupils would lose interest in the development. It was supposed that the anticipation of results would guarantee cooperative interest and that thereby the pupils would discover the essential purpose of the lesson. That view is not sound today; it exalts the process of the presentation too much. Better state the aim as a focal point for all lines of energy during that recitation period.

138. Rein on aim.—"The pupil should know beforehand what is coming, if he is to bring all his powers to bear upon the work of learning; and it is easier to call out all his effort if he knows beforehand what is to be gained. To conduct a child along an unknown road, toward an unknown object by means of questions and hints, the purpose of which he does not see, to lead him on imperceptibly to an unknown goal, has the disadvantage that it develops neither a spontaneous mental activity nor a clear insight into the subject. Having reached the end of such a line of thought the pupil looks about himself bewildered. He stands at the goal but does not see the relation that the result bears to the labor performed. He does not rise to that satisfactory mental activity and favorable disposition of mind which are stimulated by the pursuit of a clearly set purpose."—From Rein, University of Jena.

139. Preparation.—This step is an effort to make the pupils' minds ready to apperceive the new knowledge. It does not mean the teacher's preparation or the pupils' prior study although both are necessary and useful. It uses acquired

knowledge as an apperceiving group by which the new knowledge may be assimilated. So the purpose of this preparation is to put the body and the mind into a receptive attitude, and to relate the new and the old so that attention and interest will be active. In brief, it is putting mental, moral and physical powers into harmonious co-operation with the teacher's efforts.

How should such preparation be made? Agreeable opening exercises are the first contribution. In the recitation, it may be an anecdote, a description, a brief review of related work, or simply a statement of the aim of the lesson. During the day, brief physical exercises, the singing of a song, or even a two-minute visiting privilege may dispel fatigue and adjust the minds to the required condition. Tact is the best guide. The one danger is in making the preparation too long,—a scattering of attention and energy. Sometimes it is best to go straight to the presentation. In this, let the minds of your pupils be the criterion.

140. Presentation.—In this part of general method the teacher utilizes some of the specific methods discussed in the last chapter, as the inductive-deductive method. The minds prepared in the first step are now getting needed individual notions. Watch the process of passing to general notions.

141. Comparison or association.—The mind continues the process of apperception by associating, comparing and contrasting the facts of the new lesson with the facts previously acquired. The mind here abstracts the essential characteristics of each notion presented.

142. Generalization.—Now the notions so clearly distinguished in the previous step are classified in the form of rules principles, definitions, laws, maxims or tables. The mind has formed general notions.

143. Application or drill.—We have seen that the purpose of instruction is the formation of general notions or ideas. But general ideas will not remain a possession without thorough

drill. So this step requires impressive drill and application to practical life. It is the completion of each educative act, namely, the return from general notions to particular notions.

144. Dr. Hervey on formal steps of instruction.—Dr. W. L. Hervey, a member of the New York City Board of Examiners, gave his opinion of these formal steps in the New York Teachers' Monographs, December, 1900. The article is conservative and practical. He admits the validity of the opinion regarding general method and the movement of the mind, but he disapproves a rigid observance of the formal steps. He emphasizes the point that the five steps need not come in the order in which they are mentioned, but they all should come somewhere in every complete act of instruction. He cautions teachers against making the preparation too long because he has observed that pupils' minds have wonderful powers of adjustment to a straightforward and even blunt approach. He thinks that preparation instead of standing alone at the beginning of the recitation occurs at each step in teaching; each step should prepare for the next. Good teaching from start to finish is steeped in preparation. Preparation is no more an antecedent of the first step than it is of the third; hence preparation may involve the presentation, thought, or application or all of them; and second, that each of these involves preparation. There are an infinite number of preparations within each method-whole, and there should be infinite variety in the method of handling them. Nor is it necessary that comparison and generalization should hold rigidly to the order in which they are named, for we frequently ask children to think and afterwards to imagine.—From page 111, Science of Education.

145. Dr. Hervey's conclusion.—"The human mind, (generally speaking) is not a blunderbuss. Yet from the directions for making lesson plans which I have known to be given to advanced classes by teachers of the formalist type, it would appear that teaching the mind is precisely analagous to loading a brass cannon. Swabbing, taking aim, loading with powder and shot, ramming home, setting off the fuse, all must come

in a certain order not to be deviated from. Such a figure limps on both feet. In more senses than one it smacks of militarism. One who is appealed to by it belongs in a factory where things are made, or on the firing line where people are shot at, not in a school where minds grow and are fed.

Therefore, the best way, in my judgment, to profit by the doctrine is not to think chiefly of steps, or of sequence, or of separateness, or of junctions at which one must change cars for the next step—the best teachers when at their best are, I trow, not thinking about the formal steps—but to think chiefly of the ideal end of instruction, as being that happy state of pupils' minds in which, for warmth and resource, there are abundant stores of concrete imagery, and, for economy and serviceableness, there is organization-pigeon-holes and tags, card catalogues and indexes, or if you will, generals, lieutenants, and privates, each knowing his duty and each on the qui vive to do it. The formal steps are, then, so many ideals which the teacher must attain before his work is done."

146. Illustrations.—Three lessons are worked out in McMurry's How to Conduct the Recitation, pages 18-22. The subjects are Oak Trees, The Cotton-gin, Nouns. Every student is advised to study that pamphlet. It is a remarkably clear explanation of the Formal Steps of Instruction. (A. S. Barnes & Co., 15c). Several lessons are given in Part III of DeGarmo's Essentials of Method. (D. C. Heath & Co., 65c.)

147. Illustration in grammar grade reading.

THANATOPSIS.

So live that when thy summons comes to join
The innumerable caravan, which moves
To that mysterious realm where each shall take
His chamber in the silent halls of death,
Thou go not like the quarry slave at night,
Scourged to his dungeon, but sustained and soothed
By an unfaltering trust, approach thy grave,
Like one who wraps the drapery of his couch
About him and lies down to pleasant dreams.

—Bryant.

1. Write out and answer the questions you would ask to lead pupils (a) to understand the above selection; (b) to understand the meanings of the more difficult words; (c) how you would secure a proper reading of the passage. Make your answer cover a method-whole showing application of the formal steps of instruction.

I. Aim. To interpret and appreciate Thanatopsis.

II. Preparation. As a preliminary preparation, see that each pupil has a copy of the whole poem Thanatopsis. (2) Assign references for the leading biographical facts relating to Bryant, and especially the occasion of the writing of Thanatopsis, so that the pupils may acquire the information for themselves. (3) Write upon the board *summons*, *innumerable*, *caravan*, *mysterious*, *realm*, *scourged*, *dungeon*, *unfaltering*, *drapery*.

The preparation of the minds of the pupils is brief and direct in this lesson. The poem deserves immediate and energetic study. I should proceed as follows: To-day we shall study a poem from American literature. It is Thanatopsis. Perhaps it will interest you to know that the author was only a boy when he wrote Thanatopsis. Bryant wrote Thanatopsis when he was eighteen years old. It was sent to the North American Review either by the poet or his father. Richard Henry Dana of the Review supposed the writer to be some one of international reputation. The poet's father was then a member of the Massachusetts Senate. Mr. Dana went to the State House to consult him, but the appearance of Dr. Bryant seemed to satisfy Mr. Dana that Dr. Bryant was not the author, so Mr. Dana returned to Cambridge without an interview with the Senator. Later he learned that the author was the Doctor's son.

The average age of the pupils of this class is about fourteen years. You know what kind of compositions you are able to write, so let us see what kind of a composition Bryant wrote.

III. Presentation. We are required to give the questions and answers leading pupils (a) to understand the selection, (b) to understand the difficult words and (c) to read the passage properly. As these three requirements can better be covered in treating the lesson as a unity I should follow the plan of critical reading. This kind of reading requires pupils to go through the whole selection three times. The first reading is for the pleasure; the second to get the plan of the work; and the third to go into the construction of the work and of the sentences, the meaning of words, allusions, etc.

T. What does the word Thanatopsis mean?

P. Thanatopsis means a view of death, or a meditation on the subject of death.

T. What part of the poem is the selection given?

P. The selection is the last part, or the conclusion of the poem.

T. What does summons mean?

P. Summons means an order calling a man to court.

T. Find a general meaning of the word.

P. Summons means a call from any authority.

T. What word on the board is familiar to you from your other studies?

P. Caravan means a wagon or a company of persons crossing a desert.

T. With what occupation do you associate the word caravan?

P. Caravan makes me think of commerce.

T. In this poem, which meaning does caravan have—a commercial outfit or simply a number of

persons crossing a desert? Find the meaning of innúmerable, and the answer will seem clearer to you.

T. What other word have we had before?

P. We read of a king's realm or country, in history.

T. What kind of realm is mentioned here?

P. A mysterious realm. This means a country we do not know much about.

T. If you recall your history stories, you will find a word here which suggests a kind of punishment.

P. Scourged is the word. It suggests the punishment of slaves.

IV. Application. Three readings will give the pupils an understanding of the poem. To help pupils appreciate the spirit of the poem, I should explain the difficult allusions, show how death emphasizes the brotherhood of humanity in nature and then study this particular selection as an exhortation to better living. Summons will then have a broader meaning because it comes from God; innumerable caravan means all mankind; mysterious realm is the hereafter; and the consciousness of a life well spent will rob death of its terror. I should take a week, if necessary, on this poem, not in the dissecting of it, but in mastering the points of strength and beauty that combine to make Thanatopsis such a remarkable production.

148. **Illustrative lesson on attribute complement.**—Attribute complement or attribute is known as predicate noun, predicate pronoun and predicate adjective.

I. Aim. To teach attribute complement.

II. Preparation. Review definition of sentence, subject, predicate, noun, verb, pronoun, adjective.

III. Presentation. Have these sentences on board.

1. Birds sing.
2. Happy children sing.
3. The children are happy.
4. Pupils become students.
5. Lincoln was a good man.
6. Longfellow was kind.
7. Longfellow was a poet.
8. It is he.
9. This is an attribute.
10. Who is it? It is I.

Sentences 1 and 2 will impress some of the points covered in the preparation. Sentence 2 is an easy approach to the adjective happy in 3.

All read the third sentence. Then individual answers on subject *children* and predicate *are happy*. Next get subject noun *children* and predicate verb *are*. Note that *are* alone is not the predicate; *are happy* is the predicate.

T. Covering word happy, asks one to read.
P. The children are.
T. Is what you have read complete or incomplete?
P. It is incomplete.
T. Uncovers happy. Now is the expression complete or incomplete?
P. The sentence is complete.
T. What word makes it complete?
P. Happy makes it complete.
T. Happy is a complement. Write word on board; analyze it: *complete* + *ment; ment* = that which. Now define.
P. Complement means that which completes.
T. What part of the sentence is completed by happy?
P. Happy completes the predicate.
T. What part of speech is happy in sentence 2?

P. Happy modifies the noun children; hence happy is an adjective.

T. What part of speech is happy in sentence 3?

P. The same; it is an adjective.

T. Yes; an adjective completing the predicate. It is a predicate adjective. Another name is sometimes given. If the children are happy, you can say that happiness is an attribute of the children. Thus for good children, goodness is an attribute; industrious pupils, industry is an attribute. So we may call happy a predicate adjective or an attribute complement.

T. Find another adjective used as an attribute.

P. Sentence 6, kind is an attribute.

T. Then, as far as you have observed, what part of speech may be used as an attribute?

P. An adjective may be used as an attribute.

T. All read sentence 4. Then proceed as before to teach that students completes the predicate and refers to the subject. It is a noun used as attribute complement; or it is a predicate noun. Likewise for predicate pronouns, eliciting for each complement (a) that it completes the predicate and (b) that it describes the subject or means the same as the subject.

IV. Comparison. Pupils distinguish attribute from object.

V. Generalization. Call for definition of attribute and, when suitable wording is secured, write definition on board. All read; individuals read. All define; individuals define.

VI. Application or drill. Direct application in such sentences as these.

1. This definition is easy.
2. Grammar is a useful subject.

3. Easy is a predicate adjective.
4. Emerson was a scholar.
5. The wind feels cool.
6. Who called? It was she.

Then apply by requiring contrast, thus:

1. This is our school.
2. We have a new school.
3. Whom did you ask?
4. Who was it?
5. This work seems pleasant.

For further drill, have pupils construct sentences containing attributes. It may be helpful to learn this sentence: The verbs *be*, *become*, *appear*, *seem*, *feel*, *look*, are generally followed by an attribute.

149. Method-whole.—The use of the general method requires a special classification of subject-matter. In order that we may apply the formal steps of instruction the subject-matter has to be grouped and classified into definite unities. Each unit of instruction is considered a method-whole. Thus in studying New York State all of the drainage could be put under an outline or classification; and then this general outline could be divided for particular lessons each week or each day. So it is that each division may be treated as a method-whole. Gordy defines method-whole as a group of particular facts involving a universal. In other words, any topic or portion of a subject that constitutes a unity such that the process of teaching follows the inductive-deductive method is a method-whole. It should be noted in connection with this explanation of method-whole that the matter of general method, formal steps of instruction, particular notion to general notion, inductive-deductive method, and complete act of instruction are all different names for one general principle underlying the Herbartian general method. The lessons on Thanatopsis and attribute complement are illustrations of method-wholes.

Chapter IX. Spelling.

150. Accuracy a worthy aim.—As long as accuracy remains a requisite of success in life, correct spelling should be considered a vital aim in education. A theoretical search for the causes of poor spelling may place the blame upon the pupil, the words studied, or the methods of teaching; but the practical accomplishment of spelling correctly will never come until teachers agree that spelling deserves to be taught as an individual subject and not merely as an incidental study. Errors are too often excused on the ground that it is impossible for certain pupils to learn to spell, or that misspelling is a mark of genius. Better strive for accuracy as an ideal than to justify errors by excuses.

151. Psychology of spelling.—It is a mistake to say that spelling depends upon the eye alone or upon any other single sense; spelling demands multiple sense instruction. In learning to spell, as in all other educative efforts, the child should be taught to use as many senses as possible. One sense may do more than another, but one sense cannot accomplish the best results without the co-operation of the other healthy senses.

152. The problem.—Poor spellers are found in every class. This is a fact, not a supposition. Our duty is to find the causes of the trouble and then try to apply specific remedies. Pedagogy is not a panacea, nor is wholesale criticism a helpful aid to efficiency. There are difficulties in subject-matter, in pupils, and in teachers.

153. Difficulties in subject matter.—The English language is a composite one, derived from a large number of other languages, and so there are many irregularities. For illustration, note the origin: depot, French; coffee, Arabic; banana, Spanish; waltz, German; sloop, Dutch; drink, Anglo-Saxon; gale,

Scandinavian; manual, Latin, epistle, Greek. The principal difficulties are the following:

1. Silent letters.
2. Language not phonetic, i. e., spelling different from sound; as, eight, phonic, praise.
3. Different pronunciations for same combinations of letters; as, *ou* in ought, soul, bough, etc.
4. The numerous sounds of the vowels. One educator puts ninety-five per cent of all errors in spelling under this head.

154. **Difficulties in the pupils.**

1. Not knowing how to study. In every lesson there are certain words which the pupils already know. In spelling as in all other subjects the process should be one of separating the known from the unknown so that the child may direct his energy toward what he does not already know. Habituate pupils to this process of selection so that they may devote their energy to the mastery of the new words in the list. Notice, too, the specific difficulty in each word. Can the word be spelled phonetically? If not, why? The answer will direct attention to the difficulty. Homonyms illustrate this difficulty. Where is the accent? Pupils rarely misspell any accented syllables because the emphasis has impressed those syllables upon sight and hearing. Hence, observe the unaccented syllables for visualization.

2. Failure in observation. Take pupil apart from the class for personal instruction. Test him on a few words to find his difficulty, and it is probable that the difficulty is in not seeing the word exactly as it is. Take two or three words apart from the printed or written exer-

cise and encourage him by having him master these few words by oral and written effort, and then give him credit for every indication of progress. This is a special effort in the formation of right habits of study, and every progress made by a defective pupil will be an encouragement that will work its own reward. A persistence in right habits will overcome the defect in failing to see the word exactly as it is printed or written.

3. Carelessness. Try visualization. Write five words on the board. Have pupils look intently at them, then cover or erase the words and let pupils try to write the list in order. A few exercises of this kind will direct attention to the difficulties in each word, to the order of the words, and to their particular relation to one another. An entire lesson can be learned by a whole class in a short time in this way. It is another means of promoting the social stimulus advocated by Dewey.

155. Defective teaching.—The third cause of poor spelling is found in the following ten mistakes in teaching spelling.

1. Depending upon the eye alone. Use eye, ear, tongue, and hand.
2. Memory overtaxed by learning unrelated lists of words. Select words pupils can use.
3. Spelling taught incidentally in connection with other studies. Make it an individual study and teach spelling alone.
4. Dictation used for review before the pupils have mastered the advanced lessons.
5. Meanings of words given as dictionary definitions. Lead pupils to give their own expressions and applications.

6. Infrequent recitation periods and lack of varied and thorough drill.
7. Classification of words according to the number of syllables. This is unscientific and uninteresting. Use grouping under comparison and contrast.
8. Trying to teach spelling when the child's mind is unprepared. Do not interrupt connected thinking in other subjects to correct a misspelled word. Keep the word for a special list.
9. Failure to use a variety of interesting drills involving competition such as spelling down or choosing sides.
10. Permitting pupils to form the habit of thinking that correct spelling is impossible.

156. What words shall pupils spell?—Some favor a list of words selected from the pupils' vocabulary and from the lessons of the grade, while others advocate the use of a spelling book. In either case, the present tendency of opinion seems to be this: *It is sufficient for a child to be able to spell the words he can use.* This view is in accordance with the principles of adaptation, utility and interest.

157. Arguments for text-book.

1. Convenience. Time saved for pupil and teacher.
2. System. Modern books are not miscellaneous lists of words; grouping and scope are determined by the needs of pupils.
3. Breadth and utility. Adequate provision is made for future demands as well as for actual present use.
4. Accuracy. Spelling, syllabication, accent and even pronunciation are accurately given. Errors are frequently made in copying lists.

5. Stimulus. Ownership is an instinct, and happy is the child who is made to feel the worth of such an incentive. The average pupil can go far beyond the limited list of words in his grade, and a simple appeal to personal ambition will encourage him to do so. The book is an invitation to self-activity; it is a means to helpful rivalry; and it offers individual guidance to the future of the child who must leave school to earn a living.

158. In favor of selected lists of words.

1. Specific utility. The words become a part of definite knowledge through the child's thinking, feeling and acting. Opposed to vague concepts because the child knows and uses every word; development through activity and apperception.
2. Interest. The child's interest is limited to the present; hence, limit words to present use.
3. Adaptation. Books adapted to average groups may not satisfy individual needs.
4. Economy of effort. Lists are conducive to concentrated, productive effort; books present many words that are useless on account of being too easy or too difficult.
5. Correlation. Lists selected from all the subjects in the grades tend to produce unity and accuracy in each child's circle of thought.

159. Combination of book and lists.—However well a book or a list may serve its purpose, there should be a special list of the misspelled words in every class. Combine all useful devices.

160. Methods.—Oral spelling, written spelling, and a combination of oral and written spelling are usually considered the three methods. Numerous devices are often discussed as

methods. The three methods mentioned should be combined or alternated frequently so that pupils may profit by all of the advantages in each method.

161. Advantages of oral spelling.

1. It teaches enunciation, syllabication, pronunciation.
2. Interest stimulated through honest rivalry.
3. Economy of time by avoiding the necessity of correcting papers.

162. Disadvantages of oral spelling.

1. It does not insure correct written spelling.
2. Every pupil does not have to spell all the words of the lesson.
3. Inattention may be fostered in a large class.

163. Advantages of written spelling.

1. Practical because it prepares for accurate written work.
2. Every pupil has to spell all the words.
3. Co-ordination of many senses.
4. Correlation of many subjects.

164. Disadvantages of written spelling.

1. The pupil must use his sense of hearing to obtain proper enunciation and pronunciation.
2. Social stimulus is lacking until the report of the exercises is made.
3. Dishonest work by copying and also in correcting the work when papers are interchanged.

165. Directions for studying a spelling lesson in class.

1. See that physical environment is satisfactory: light, heat, ventilation, seats.
2. Prepare the minds of the children by telling them that the purpose of this exercise is to master a certain amount of work in a minimum time.

3. Have pupils look carefully at a word.
4. Close book, think of the word, write it.
5. Comparison of the written word with the printed word.
6. Repeat the process when mistakes have been made.

166. How to learn a spelling lesson.—When spelling held equal rank with arithmetic and other studies, it was customary for the teacher to assign an exercise for study in school or at home, and the pupils considered it a part of their duty to learn to spell every word in the exercise. This plan of assignment and study is criticised in the new education upon the ground that the learning of such words in that manner is a mere exercise of the memory without the use of correlation or multiple sense in the process of learning. What, then, shall be substituted? A German educator, Herman Schiller, has made a practical investigation of oral and visual modes of learning spelling. His conclusions are quoted in Principal W. B. Wait's Annual Report for the New York Institution for the Blind, 1903. They are in the order of merit, from highest to lowest. The quotation marks indicate Mr. Wait's report; the criticisms are ours.

"1. Copying with speaking (naming the letters softly)." This plan employs the eye, the ear, the tongue and the hand; it requires attention, observation, and physical poise; it presupposes good control of the class and favorable environment.

"2. Copying with speaking aloud." This plan is criticised upon the ground that the noise made by a large number of the pupils may be a source of disturbance to several pupils in the class.

"3. Seeing with writing movements." Under this plan a word is written upon the blackboard

or upon a card so that every pupil in class can see it. All pupils fix their gaze upon the work in an effort to visualize it. In making the writing movements in the air, their effort to learn combines the sense of sight and the motor activity.

"4. Spelling (hearing the letters named)." This plan is criticised because it deals with letters as the units of our language instead of considering words as symbols of ideas.

"5. Seeing with speaking aloud."

"6. Seeing with speaking softly."

"7. Seeing alone."

"8. Hearing with writing movements."

"9. Hearing and speaking aloud."

"10. Hearing with speaking softly."

"11. Hearing alone (word pronounced only)."

"In all these methods, except hearing the letters named, and hearing the word pronounced, but not spelled, the work is done by the pupil alone. Spelling based upon words pronounced but not spelled to the pupil takes the lowest place, but spelling based on words both pronounced and spelled to the ear takes fourth place. Here it should be noticed that there is a long period in the child's life before it has learned to read or write, when hearing and speech are the only available means of learning language."

"It will be seen that Schiller gives first place to a composite method; copying and speaking softly; the complete act involving the four memories, namely, a visual form of memory, a manual motor memory, vocal motor memory and the aural memory."

167. Suggestions to the teacher.

1. Pronounce the word only once.
2. Give only one trial in oral spelling.
3. Work for natural tones in spelling.

4. Do not mispronounce unusual words for the sake of aiding the child in spelling such words.
5. Vary the order from that given in the spelling book.
6. Have pupils pronounce the word before and after spelling it.
7. Have pupils pause at the end of each syllable, but do not have them pronounce each syllable separately.
8. Teach phonic spelling whenever that will be an aid in mastering the words.

168. Rules for spelling.—A few simple rules may be helpful to pupils who find difficulty in ordinary spelling, but such memorizing should be limited to actual usefulness. The limitations are evident as soon as a child finds more difficulty in learning and applying the rules than in memorizing the words themselves.

The substance of the rules is the same in all texts, but simplicity and clearness in wording is found in the following from Reed and Kellogg's Higher Lessons in English, page 258.

RULE I.—Final e is dropped before a suffix beginning with a vowel; as, fine, finer; love, loving.

Exceptions.—The e is retained (1) after c and g when the suffix begins with a or o; as, peaceable, changeable; (2) after o; as, hoeing; and (3) when it is needed to preserve the identity of the word; as singeing, dyeing.

RULE II.—Y after a consonant becomes i before a suffix not beginning with i; as, witty, wittier, dry, dried.

Exceptions.—Y does not change before 's, nor in forming the plural of proper nouns; as, lady's, the Marys, the Henrys.

RULE III. In monosyllables and words accented on the last syllable, a final consonant after a single vowel doubles before a suffix beginning with a vowel; as, hot, hotter; begin, beginning.

Exception.—X, k, and v are never doubled, and gas has gases in the plural.

169. Classification of words.

1. Primitive. A word in its simplest form is a primitive or prime word; as, by, in, man, short, go.
2. Derivative. A word formed from a primitive word by joining prefixes or suffixes is a derivative word; as, going, unmanly, recall.
3. Compound. Two or more words united into one word form a compound word; as, today, watchman, subject-matter, text-book.
4. Synonyms. Words having the same or similar meaning are synonyms; as, hope and expect; certain and sure; devout and pious.
5. Antonyms. Words having opposite meaning are antonyms; as, good and evil; lazy and industrious.
6. Homophones. Words having the same sound but different spelling and meaning are homophones; as, sell and cell; beer and bier; write, rite and right. Sometimes called paronyms or homonyms.
7. Homonyms. Words having the same sound and spelling but different meaning are homonyms; as the verb bear and the noun bear; the verb receipt and the noun receipt.

170. How to teach synonyms.—The first attention to synonyms will be directed by the teacher. During the class criticism of compositions, favorable occasions will arise. The teacher's explanation must be the source of information until pupils are able to understand the dictionary distinctions. Pupils enjoy the liberty of expression that seems to be granted by the choice of words. Following are suggestions.

1. Let oral and written language show the need of synonyms.
2. The early use of synonyms is larger power of expression; a later use is precision in language.

3. Observe the choice of words in quotations, dictation and other literary material. This is using a model.
4. Have pupils use their own language in making distinctions; verify answers by dictionary or other authority; use the synonyms in sentences.

ILLUSTRATIONS.

1. Ability, capacity. Ability is active power; capacity is receptive power. You have shown ability in algebra and capacity in literature.
2. Between, among. Between is a preposition showing relation of two things; among, more than two. Rachel stood between first and third among forty pupils.
3. Habit, custom, usage. Habit relates to acts of an individual; custom implies the consent of many; and usage is established custom. If you wish to conform to the usage of literary men, observe the custom of our best writers and then try to form habits accordingly.
4. Character, reputation. Character is what you are; reputation is what people think you are. "Character is injured by temptations and by wrongdoing; reputation, by slanders and libels."
5. Compare, contrast. Compare is to find resemblances; contrast, to find differences. Compare Labrador and England in latitude and contrast them in climate.

171. How to teach homophones.—As these words are alike in sound, the sense of hearing alone will lead to error. Observe the difference in spelling and the difference in meaning. With younger pupils, the words should be mastered one at a time; with older pupils, the whole group furnishes a basis for contrast and a stimulus for mastery. A few groups will

suffice. It is understood, of course, that use in good sentences is one final test of a knowledge of the spelling and the meaning of homophones. The Rational Spelling Book, by Dr. J. M. Rice, calls such words as these homonyms.

bad, wicked
bade, did bid.

dying, expiring
dyeing, coloring.

rain, water from clouds
reign, to rule
rein, part of harness.

rite, a ceremony
right, correct
write, to record letters
wright, a workman.

air, atmosphere
ere, before
e'er, ever
heir, one who inherits
Ayre, a town in Scotland.

172. How to teach homonyms.—Since homonyms differ in meaning only, this one difference is the point to attack in teaching and learning. Recall all that has been approved as efficient teaching of spelling and apply as much of it as possible in teaching homonyms. Here are a few specific directions.

1. Teach only such homonyms as young children need to know.
2. Teach one homonym at a time.
3. Teach by conversation and explanation; have pupils converse, explain, and use the word; write sentences.

4. Teach the corresponding homonym in a similar manner.
5. Use both in sentences; drill upon meaning and spelling; pupils construct sentences.
6. Illustrations of homonyms.

bear, an animal
bear, to carry.

cheer, good feeling
cheer, to encourage.

saw, a carpenter's tool
saw, did see.

173. How to teach the meaning of words.

1. Associative or objective process. The object is shown and the name applied. If object cannot be used, show picture or other representation. Moulding board is a familiar means. Thus in teaching the noun *divide*, a word used for watershed in geography. Observe a divide in the school yard after a rain; compare roof; make an excursion to a hill and see that it is a divide; use pictures, drawings and sand table.
2. By imitation. Buzzing, flying, swimming, rowing, and similar words are represented by action; likewise for words like mew, bark, purr, neigh and bleat. This activity appeals to the dramatic instinct in children. Compare kindergarten activity.
3. By the context. Most words being understood, focus attention upon what is not understood and then try to supply or substitute the meaning needed to complete the thought in the sentence. Take a quotation from Hawthorne: "Happiness in this world, when it comes,

comes *incidentally*. Make it an *object* of pursuit, and it leads us a wild-goose chase, and is never attained." The italicised words can be defined from the context.

4. By etymology. Take autograph: *graph*, write; *auto*, self; a signature written by the person himself. Compare telegraphy, phonograph, geography, stenography. Consult Anderson's "A Study of English Words", American Book Company, 1897; Trench's "On the Study of Words"; Greenough and Kittredge's Words and their Ways in English Speech, Macmillan, 1901; Kennedy's What Words Say.

In analysis and synthesis pupils should use the technical names of the parts of words. Root, stem, base, adjunct, prefix and suffix are used by different authors, but base, prefix and suffix are enough.

The primitive form of a word is the root. It is the name used by philologists to denote the original form and meaning of the word.

That part of a word to which the inflectional endings are added is the stem. The stem may be the same as the root, or it may be a modified form of the root. Thus in abduct, *duc* is the root; *duct* is the stem.

The word or stem to which other parts are joined is the base. The base may be a word, as in *man*+hood; or it may be a stem, as in auto+*graph*.

A form or word joined to the base is an adjunct, as rest+*ful*, *steam*+boat.

A form placed before the base is a prefix; after the base a suffix.

ILLUSTRATIONS.

PREFIX	BASE	SUFFIX	DERIV-ATIVES	MEANING
ad, to	join,add		adjoin	to join to
bene, well or good	factor, doer		benefactor	one who does good
contra, against	dict, speak		contradict	to speak against
super, above	script, written	ion, that which	super-scription	that which is written above
ob, against,	vi, way	ous, being	obvious	being directly in the way against or in front of us.
ad, to	ject, thrown	ive, inclined to	adjective	inclined to be thrown to another word.

5. By the history of words. This is another kind of etymology. Thus dahlia is derived from the name of the botanist Dahl. Dunce is from Duns Scotus, a famous scholar, whose theories were later ridiculed so much that his name became a synonym for stupidity. Trivial is from *tres viae*, the junction of three roads in Rome where gossipers spent their time in idle talk. Sincere is *sine*, without, and *cera*, wax; a guaranty applied to perfect vases sold in Italy.

6. By finding synonyms. Comparison and contrast impresses the meaning and at the same time enlarges the vocabulary. For example, take excite and incite. Excite, to rouse feelings for action; incite, to urge the excited feelings to accomplish something. A teacher excites her pupils for the consideration of social duty and then incites them to do their duty.

174. How pupils may show their knowledge of the meaning of words.

1. By use of the words in conversation.
2. By interpretation of the words in reading.
3. By constructing illustrative sentences. Inflammable means burning with a flame, while combustible means burning without a flame.
4. By forming definitions.
5. By using synonyms.
6. By etymology.
7. By drawings and models.

175. Means of learning pronunciation.

1. By imitation of teacher.
2. By phonic drill.
3. By practice under 174.

176. Uses of the dictionary.—The dictionary is intended as a means of verification and as a source of general knowledge. In this use the pupils should be taught the following:

1. How to find the word.
2. How to understand the sounds of the letters as indicated by the diacritical marks.
3. To master the syllabication.
4. To observe the accent.
5. To give the pronunciation of the word.
6. In later grades the dictionary will aid in securing the varied meanings and also in mastering synonyms, antonyms, etc.

177. Exercises in word-building.—This synthetic drill supplements the exercises in analysis of words, and also serves as generalization and application of all phases of knowledge in spelling. Some different ways are suggested.

1. Write on board a dozen common prefixes and their meanings; likewise with root-words and suffixes. Have pupils copy in books for permanent use at home or in school. This material

can be used in a lively competition to form the largest number of words. Pupils should consult dictionary to prove the accuracy of their own work. The teacher should help pupils to memorize all the prefixes, suffixes and root-words given; drill frequently upon the lists; and encourage pupils to enlarge the lists. The usefulness of such lists is a satisfaction to pupils.

2. Each pupil gives a word having the suffix *er*, and then defines the word.

3. One pupil gives a word and another pupil names synonym or antonym.

4. Teacher suggests a word like graphic; pupils give other words having the same root.

5. Suggest phonogram such as ail; conduct phonic drill on b, f, h, j, m, n, p, qu, r, s, t, w; combine; spell phonetically; use in sentences. Proceed in a similar manner with other phonograms like ate, at, et, air, ow. All the letters of the alphabet will thus receive phonic drill.

6. Form words from letters. Grant right to use the whole alphabet, but put a time limit upon the work. This exercise is a test in the constructive ability of the pupil. It is the synthetic process of testing analysis. Every effort to form a word from the given letters makes an exercise in recalling the roots, the prefixes and the suffixes in familiar words. At the same time it may be a review of phonics as employed in homonyms and antonyms.

178. Correlation through dictation.—The dictation exercises made by the teacher or the pupils will make use of the related parts of the grade work. If the pupils are following a selected list of words instead of a spelling book it is likely that every

word will be studied in its related sense rather than as an isolated word.

179. "Make every lesson a spelling lesson."—Not approved pedagogy. The custom of directing attention to misspelled words in every recitation is likely to distract the pupils by taking their attention from connected thinking in some other line of work. Such distraction cannot be justified for the sake of correcting misspelled words. As already suggested, there should be a special spelling list in every class. It is better for the teacher to make note of any errors in the other lessons and then reserve those misspelled words for the regular exercise during the spelling period.

180. Pronunciation of each syllable.—This practice is not generally approved. It is better to indicate a syllable by a pause, since the pronunciation of each syllable tends to separate the word into so many elements and thus to destroy its function as a symbol of one idea.

181. Repetition in writing mispelled words.—Do you approve writing misspelled words fifty times or more? No, not even ten times. Such an exercise is harmful as a means of correction. After a number of repetitions, the writing becomes a formal exercise without thought.

182. Co-operation of pupils.

1. Ask the pupils to prepare twenty-five words for spelling examination. Suggest that this work be done at home so that the individual element may be sure to be felt.
2. Invite pupils to make dictation exercises covering the work of a week or a month. Insist upon the standard of accuracy in spelling, capitalization, and proper use of the words. Invite the use of sentences taken from literature or some other subject in the grade rather than the construction of sentences dealing with meaningless thoughts of the child.

3. Ask one pupil to choose four others to serve with him as critics in marking the class exercises for a certain day. Have the work done at home and have each critic sign his name to the paper marked by him. Return papers the following morning and distribute them to their owners. Permit each pupil the right of an appeal to his critic and finally to the teacher. This exercise emphasizes the responsibility of the critic while it teaches the child the real meaning of criticism as distinguished from fault-finding.

183. Grouping words by comparison.—We have already said that grouping words according to the number of syllables is unscientific. Some authors group according to meaning; others according to subjects or occupations. Comparison in spelling looks for similarities.

out	ought	rough
hour	thought	enough
drought	sought	tough
pout	bought	slough
stout	brought	southern
dough	through	should
soul	wound	would
source	tour	could
shoulder	you	
although		

184. Grouping by contrast.

hour	bow	nought	too
power	sew	naught	through

rough	wood	dough
ruff	should	low

185. **Variety in the recitation and reasons therefor.**

1. Teacher pronounces words, pupils write on paper; teacher spells words, each pupil marks his own paper and rewrites misspelled words. Oral spelling of all the mispelled words. This plan maintains order, institutes the habit of systematic procedure and requires the use of self-activity and individual responsibility. It is a preparation for future pupil government in the spelling period.
2. Teacher pronounces words, pupils write; self-correction, pupils consulting books; papers submitted to teacher. This plan is an effort toward self-correction and a test of observation, industry and honesty. The pupil does the work.
3. Teacher pronounces words, pupils write; papers exchanged, marked and returned; critics consult each other if necessary and refer to books to settle disputes. Such mutual criticism exalts the function of criticism, habituates the critic in accuracy, has justification by authority and gives the consciousness of social responsibility. Each pupil begins to feel his two-fold duty to the class and to himself.
4. Teacher pronounces words, pupils write; one pupil stands, faces class, pronounces and spells while the others mark their own papers. Replace the spelling monitor if he misspells a word. This device tests enunciation, syllabication and pronunciation; stimulates the desire of recognized leadership; promotes an active class spirit and sustains a healthy interest in the work of the recitation period.
5. Divide the class into two groups; all pass to the board; one group writes, the other group

criticises; teacher or pupil pronounces words. Alternate the groups. In this way the teacher sees all the work and readily estimates its accuracy while the pupils are actually doing the work.

6. One group at board, one group writing at desks. Teacher pronounces words, notices errors at the board, and pronounces a second time the misspelled words. Pupils at seats aid as critics. This exercise is an economy of time for teacher and pupil as it serves to approximate the work of a regular examination.
7. All stand, spell in order, teacher not mentioning the misspelled words. The pupil who detects and corrects a misspelled word passes to a place of honor. This utilizes the competitive instinct in children and promotes the habit of thoughtful alertness.
8. Choosing sides.
9. Spelling down.
10. Class responsibility. Appoint a committee of five pupils to prepare words for one week. Let this committee put words on board, conduct spelling recitation, mark papers, tabulate reports, and suggest remedies for faults. This plan has so many merits that none but a weak teacher will reject it.

Chapter X. Composition.

186. Utility and culture.—To him who looks for the practical value of education, oral and written composition has recognized usefulness as a means of business intercourse. No argument is needed to justify the prominence given to composition in the course of study; the only appeal is for some kind of teaching that will assure rapidity and accuracy in the approved forms of commercial expression.

There is another value in composition, aside from that which helps to earn a living. It is the culture value. Literature is composition; and out of the treasures of literature many a mind has drawn a compensation that is not measured by dollars and cents. It is a compensation that serves as a satisfactory substitute for much that is lacking in life. This joy of literary appreciation is a direct stimulus to imitative construction in composition. Here is one reason why pupils are required to study literary masterpieces as models. In studying a type of composition, the pupils are getting proper habits of interpretation and appreciation; the appreciation arouses a desire to imitate; and the desire to imitate is carried into execution through the voluntary act of the will. Thus we have an educational process in which the fruitage of culture is both a cause and an effect.

187. General aims.

1. To educate by stimulating thought.
2. To develop the habit of fluent, easy and correct expression.
3. To help impression through expression.

188. The pupils' motives: pleasure, spontaneity, interest.—To relieve the writing of compositions from all feelings of drudgery, teachers are urged to make the desire of giving pleasure the predominating motive of the child. As soon as a pupil aims to write something that will please his teacher or his class-

mates, or any other friends, his production will be characterized by spontaneity; in reading it or having it read, his interest will be sustained or increased; and after receiving favorable criticisms, which should always be given, he has a powerful stimulus for more and better work in this line. Note that the intellect, the feelings and the will are all strengthened as the pupil habituates himself to writing under these conditions.

189. Principles determining selection of matter for compositions.

1. Within scope of child's knowledge.
2. Within scope of child's interest.
3. Limited to prevent wandering.

190. Kinds of composition exercises.—The two general divisions of composition work are oral and written. Under each of these, there are various subordinate kinds which will be discussed in this chapter. One mistake in teaching is to separate oral and written exercises. Each aids the other and both should be used in every development exercise.

191. Oral composition.—This form of composition naturally precedes written composition, but pupils do not realize that talking is composing. While oral composition is a specific kind in itself, it should always be used as a preliminary preparation for every written composition. It makes the transition easier because the pupil feels that the writing is only another way of expressing what has already been expressed orally.

192. In primary grades.—In the lower primary grades, the oral work may be divided into conversation and reproduction, the aim of the latter being to have the child give the exact words as nearly as he can. Simple and interesting conversation topics may include nature study, pictures, experiences of childhood, facts impressing kindness, good conduct, cleanliness and courtesy; and a little later the use of myths, fables, and historical narratives may be introduced.

193. Dr. Maxwell on oral composition.—The phases of oral composition are here presented in seven headings. In regard

to the use of sentences to explain the meaning of words, some recent writers do not agree with what is said in 7. They hold that correct use in a sentence is one way to teach the meaning of words. See section 173.

"1. All answers to questions should be given in complete statements.
2. Discussion of the contents of the reading lesson.
3. Reproduction of stories told or read by the teacher.
4. Description of processes in arithmetic and manual training.
5. Separation of sentences into their complete subjects and predicates.
6. Recitation of prose and poetry.
7. Explanation of the meaning of words. Putting words into sentences is not a method of teaching the meaning of words, but a method of determining whether the meaning of a word is known."

—School Work, vol. 1, p. 1.

194. Kinds of written exercises.—Some kinds of written work are suggested here but other classifications are accepted. Teachers will see the necessity of using oral work in connection with transcription, dictation, forms of correct expression, reproduction, paraphrase, abstract and elaboration.

Transcription or copying. Much importance is placed upon the habit of copying correctly from the board, from paper, or from books. Very few advanced pupils are able to copy accurately, because they never formed the habit of doing so in the primary grades. This exercise may be directed so as to teach or review capitalization, punctuation, unity of the sentence, sequence of thought, and paragraphing. Select material that is interesting and intelligible, and then require absolute accuracy. Do not make these exercises too long or too frequent.

195. Dictation.—Exercises in dictation have a wide use in applying the principles of composition, and especially in

forceful drilling to correct errors. If the exercises for dictation are taken from the books used by the pupils, self-criticism is made easy and practical.

196. Forms of expression.—Exercises on correct forms of expression will habituate the pupils to the proper use of words before the technical reasons are understood. These exercises include such words as *is* and *are*, *have* and *had*, *doesn't* and *don't*, *shall* and *will*, *may* and *can*, double negatives and other common errors.

197. Reproduction.—This form of composition exercise means the recalling of the exact words of the author. This restricted meaning of reproduction may not be accepted outside of New York City. Here and elsewhere the selections for reproduction should be models in thought and style.

198. Paraphrase.—This exercise means the expression of another's thought is one's own language. It is helpful in causing a pupil to get the thought expressed in a given passage; but many educators consider it a harmful exercise because it degrades the author's beauty of style and thought. Better to memorize the selections for reproduction.

199. Abstract.—A condensed statement of the substance of another's thought in one's own language is an abstract.

200. Elaboration.—This term is the converse of abstract writing. Brevity characterizes the abstract; enlargement and elucidation are characteristic of elaboration. It is an exercise conducive to freedom of thought and expression in narration, description, and exposition.

201. Kinds of written composition.—Description, narration and exposition are three kinds used in elementary classes. Description presents the appearance of things; narration presents a series of actions or happenings; while exposition seeks to explain the meaning of things. For a satisfactory treatment of how to teach these and other kinds of elementary

composition, see Maxwell and Johnston's School Composition. (American Book Company).

202. Problems.—The difficulties or problems in teaching composition may be summarized as follows:

1. The selection of subjects, topics or themes.
2. How to conduct the recitation preparatory to writing.
3. Criticism and correction.
4. The use of models in 1, 2, 3.

203. Selection of subjects.—Three considerations are sufficient.

1. Principles. Same as in section 189.
2. Correlation. Select subjects from history, geography and other grade work. This kind of selection comes under the principles in 1.
3. Avoid such abstract subjects as Vanity, Ambition, The Growth of Pessimism. This suggestion is also under the principles in 1. Teachers are frequently asked for a positive suggestion on the selection of subjects, and so 2 is given; for negative suggestion, use 3.

204. Some suitable subjects.

FOURTH YEAR.

Science. Coal and Its Uses.
Geography. The Harbor of New York.
History. Henry Hudson.
Biography. Longfellow.
Personal experience. A Visit to the Museum.

FIFTH YEAR.

Subjects similar to those in Fourth Year.
Narrative. The Boyhood of Lincoln.
Descriptive. The Making of a Base Ball.

SIXTH YEAR.

Advantages of the Panama Canal.
The Aunt in Snow Bound.

Why I Like Whittier.
The Necessity of Bathing.
What I Should Do with a Thousand Dollars.
The History of Our Flag.

SEVENTH YEAR.

Narration. My Progress in Four Years.
Description of a picture. The Signing of the Declaration of Independence.
Exposition. The Uses of Our Forests.
Argumentation. Virginia vs. Massachusetts in American Progress.
Science. Wireless Telegraphy.
History. The Decisive Effect of the Battle of Saratoga.
Geography, History, and Literature in Evangeline.

EIGHTH YEAR.

My Favorite Character in the Deserted Village.
The Kinds of Levers.
My Opinion of Webster as an Orator.
The Power of Simple Words in the Gettysburg Speech.
The Causes of the Mexican War.

205. The model as a preparation for writing.—See specific directions in School Composition. We shall prepare the class for writing by studying, analyzing and imitating a model. Another exercise will deal with the preparation of original material.

206. The selection of a model.

1. Select a model from some book in the class. Every pupil should have a copy in his hand. Why? See sections 317 and 318.
2. Select a model that the class will appreciate. There can be no culture value in interpretation that lacks appreciation.

3. Select a model having some rhetorical excellence such as clearness, choice of words, or good outline.

207. The study of the model.—Suppose the model selected is "The American Indians," a prose selection in the class reading books.

1. Pupils read selection to get the general nature of the selection.
2. Second reading for the more careful treatment of important parts, the aim being to bring about an appreciation of the beauty of the selection rather than to accumulate a fund of information concerning words or allusions. But there is special attention given to what words are used and how they are used; to structure, capitalization and punctuation of sentences; to unity, continuity and topic sentence in each paragraph. This analytic study reveals the structure of the parts and the whole, and also enables the class to make an outline showing the thought or plan of the author.
3. A third reading will give increased appreciation and leave the selection as a unit in the pupils' minds.

208. Imitation of the model.—The study of the model gave us an outline. It shows the thought in the author's mind and the arrangement or plan in the selection. It follows.

THE AMERICAN INDIANS.

I. Introduction. Probable origin of the Indian race.
II. Body.
   1. Physical appearance and dress.
   2. Manner of living; occupations, pleasures.
   3. Relation to the white people, as friend and as enemy.
   4. Future of the Indians.

III. Conclusion. A peculiar type of man in American life.

Now have the pupils give the substance of the selection, using their own oral wording.

Observe outline again. Take The Eskimo for a subject and write a composition according to this same outline. A kindred subject is considered better than the same subject as the latter invites too much use of verbal memory.

209. The model in criticism.—Now the compositions on The Eskimo are ready for criticism, supposing that a day or more has elapsed since the compositions were written. Comparison with the model is the process; and the points to be observed are the ones observed in the study of the model. This first criticism by comparison should be done by teacher and pupils working together.

210. Outlines.—The study of the paragraph leads to the use of outlines. In the fourth grade the teacher should co-operate with pupils in making outlines and then have pupils compose orally on these outlines before writing. Some hold that this making of outlines produces mechanical, uninteresting and unimaginative writing; but, on the other hand, the weight of opinion favors the plan as a means of securing unity and continuity of thought.

211. Composition without model.—The time will come, of course, when pupils will write compositions without using a model as a preliminary preparation. The model is only a *type*, and so the model is not required after the type has become familiar. In such cases, a regular order of procedure may be used.

1. Assignment of theme.
2. Books should be read, lessons reviewed, subjects investigated; in short, information gathered from all convenient sources.
3. Oral composition for summarizing, condensing and organizing material.

4. Write outline.
5. Write composition.

212. Criticism of compositions.

1. By pupil acting under general direction of teacher. Have first reading for paragraph structure; second reading for sentence structure covering concord of subject and predicate, adjective and noun, pronoun and antecedent, etc; third reading for spelling of every word.
2. By use of the model. Typical composition read or written on board and then each pupil corrects his own.
3. Interchange of compositions
4. By the teacher. This is necessary once a month as a means of estimating the work of the class, but it is not approved for regular weekly criticism. It mortgages teacher's time which should be reserved for rest or change of work; it violates the principle of self-activity of the pupil; it is practically useless unless the compositions be returned and the pupils be led to avoid similar errors in the next composition.

213. Suggestions on criticisms.

1. Teach pupils to consult grammar, dictionary, book of synonyms, and any other helpful references. This will aid self-criticism and at the same time teach pupils how to study.
2. Reject all slovenly work and, if due to carelessness, have the composition rewritten.
3. Do not try to read all compositions. Select a representative group and then make these the subject of criticism.
4. Establish a standard of excellence and adhere to it.

5. Treat individual difficulties in brief, personal interviews.
6. Give maximum praise for every indication of improvement.
7. Use constructive criticism. The child must think as a child and write as a child.
8. Assist pupils to clear thinking. The outline aids clearness.
9. Use a simple code of marking. One is given in School Composition, p. 223.

214. Structural errors.—We do not expect pupils to acquire a finished literary style during eight years in the elementary grades, but we do expect to find fewer structural errors from year to year. One cause for disappointment is the number of rules given for guidance. Nearly all the points can be grouped under the sentence and the paragraph; and the only safe remedy for recurring errors is to return to a review as suggested in the next two paragraphs.

1. The sentence. It is a matter of discussion whether the sentence or the paragraph should be considered the unit in composition. Reserving the decision, the teacher must teach the individual sentence before pupils can become proficient in composition. Spelling, capitalization, punctuation should be observed in all grades; recognition of subject and predicate in primary grades; simple, compound and complex sentences with word, phrase, or clause modifiers in grammar grades. Neither subsequent construction nor criticism can be intelligently done if pupils fail to master a working knowledge of the sentence.
2. The paragraph. Viewing composition work as a whole, the paragraph is the unit of thought. Lower primary pupils may be able to think

only in sentences, but pupils in grades four to six can understand the use of the paragraph. The concept of the paragraph is most easily secured by the analytic study of a model. Such a study will reveal the writer's plan made up of beginning, middle and end; or, as the parts are called later, introduction, body and conclusion. An oral discussion of the plan or outline will lead to an interpretation of this framework of the paragraph; and then, following that outline, the pupils may write a paragraph; the last process is comparison and criticism. This exercise embodies analysis and synthesis.

215. **Pertinent questions answered.**

1. *Should pupils be compelled to rewrite all compositions?*

   No. Such expenditure of time in the correction of errors does not seem prudent. Better write another composition and thus apply principles of correction.

2. *Should compositions ever be rewritten?*

   Yes, if carelessly done. Have the work done as extra work. If pupils write thirty compositions a term, it is thought useful to have four or five perfect compositions in the set.

3. *Are original drafts kept for reference as an indication of progress?*

   Yes. Many teachers prefer to have a separate book for composition so that the pupil may have a guide to his own progress.

4. *Are first copies written in ink or pencil?*

   Pencil in lower grades; ink in upper grades.

5. *When letters are written, does the addressing of the envelope (or rectangle representing same) form part of the exercise?*

   Yes.

6. *Do teachers allow pupils to consult dictionaries and other such aids during the composition lesson?*

   Yes. Teach pupils to use all helpful material.

7. *Should a model be constructed by the teacher?*

   No; make a selection from good literature.

8. *Are errors due to carelessness or ignorance?*

   Most of the errors are due to carelessness. The pupils rely upon the teachers to find and mark the errors.

9. *How long a time usually elapses between the writing of a composition and its correction by pupils?*

   If possible, allow at least two days to elapse. Dr. Maxwell says that the correction of compositions should not be made during the same or the following period.

10. *Does criticism tend to check spontaneity and originality?*

    With conscientious pupils, yes; with indifferent pupils, no. The tendency toward sympathetic, constructive criticism is not likely to produce unsatisfactory results.

11. *Do you ever have compositions on which no criticism is made?*

    Yes, to encourage individuality. Let it be known in advance that the productions are to be read by the writer without oral or written criticism.

12. *When pupils correct the compositions of others, do you require the critics to sign their names?*

    Always. This allows the right of appeal to the critic or the teacher. It fosters criticism rather than fault-finding.

13. *Should teachers use colored pencil or black pen or pencil when they correct compositions personally?*

    Colored pencil. Economy of time for teacher and pupil in reviewing marking.

14. *Do teachers indicate errors, or actually correct them?*
Indicate the errors.

15. *In what grade may self-correction be advantageously introduced?*
As soon as pupils are capable of writing a sentence, they should begin self-criticism. Their knowledge of self-criticism should increase with their general knowledge. It is a part of self-realization. Hence, self-criticism can be justified in all grades above the third.

16. *Is a time limit assigned?*
Yes, in school; on original composition at home, no. But it is advisable to habituate pupils to approximate time limits at home as well as in school. They must meet such requirements in business.

17. *Do you ever allow pupils to choose their subjects?*
Yes, within specified limits. Unlimited choice leads to vacillation and consequent loss of time.

18. *Should the best compositions be read at morning exercises?*
Yes; this establishes an honor standard.

19. *Are your pupils encouraged to write poetry?*
Yes, occasionally. Every class can produce some meritorious poems.

20. (*1*) *What is the relative value of composition in school work?* (*2*) *How should outlines be used?* (*3*) *Give an effectual method of criticism.* (*4*) *Discuss the scope and method of correction.*
(1) Composition is one of the most important exercises in school work. It is a means of expression in all the other studies, and it can be made an efficient test of general intellectual progress.
(2) Outlines should be used as guides in the selection and arrangement of important points.

Pupils should be taught to make their own outlines by study and analysis of model compositions. Take interesting selections from such writers as Hale, Irving, Alcott, Thoreau, or any others liked by the pupils; read the selections and make a list of the topics. Have children reconstruct stories from given outlines and then compare their compositions with the model.

(3) Have compositions read in class and criticised favorably by teacher and pupils. Try to arouse the interest of the pupils by encouraging them to do their best to merit the approbation of their associates.

(4) Teachers should not pass valuable time in correcting compositions. Make the pupils critics of their own work. In this way the pupils will learn to find their own errors, amend them as well as they can, and try to avoid similar errors in the future. Following are some rules to train pupils to criticise and correct their own compositions: "(1) Give the pupil all needful books of reference, and teach him how to find what he wants. (2) Have the pupil look for only one class of errors at one time. He should examine (a) his outline; (b) his sentence structure; (c) his capitalization, punctuation, and spelling. This would necessitate three careful readings of his composition." See Maxwell and Johnston's School Composition.

Chapter XI. Grammar.

216. Value of technical grammar.—A third phase of language study in the elementary school is formal grammar. The works of literary art in the readers, re-inforced as they ought to be by supplementary reading at home of the whole works from which the selections for the school readers are made, will educate the child in the use of a higher and better English style. Technical grammar never can do this. Only familiarity with fine English works will insure one a good and correct style. But grammar is the science of language, and as the first of the seven liberal arts it has long held sway in school as the disciplinary study *par excellence*. A survey of its educational value, subjective and objective, usually produces the conviction that it is to retain the first place in the future. Its chief objective advantage is that it shows the structure of language, and the logical forms of subject, predicate, and modifier, thus revealing the essential nature of thought itself, the most important of all objects because it is self-object. On the subjective or psychological side, grammar demonstrates its title to the first place by its use as a discipline in subtle analysis, in logical division and classification, in the art of questioning, and in the mental accomplishment of making exact definitions. Nor is this an empty, formal discipline, for its subject matter, language, is a product of the reason of a people not as individuals but as a social whole, and the vocabulary holds in its store of words the generalized experience of that people, including sensuous observation and reflection, feeling and emotion, instinct and volition.—Report of Committee of Fifteen, page 48.

217. Scope of this chapter.—In this chapter it is not necessary to try to cover every point in grammar. Approved text books suggest suitable methods of presentation in accordance

with the characteristic plan of development of such texts. It is necessary, however, to present some of the most important and most difficult parts; and so we have selected what may serve as types in the matter presented and in all related matter. Thus the plan of teaching the noun clause is a distinct type of mental procedure which may be followed in teaching adjective clauses and adverb clauses.

218. A habit of thinking.—One specific value of grammar is the habit of mental activity acquired by an orderly way of attacking each sentence. Teach children to read the sentence, to find the principal parts, to select and classify the modifiers, and then to dispose of the independent elements. Teach the fundamental facts; and make all pupils feel that a mastery of the simple sentence means a mastery of nearly all grammatical relations. In this way, grammar will not remain a synonym for what is difficult or impossible.

219. Facts before conclusions.—In regard to mental processes, teachers are urged to habituate pupils to observe the facts first and then draw the conclusions.

Consider this sentence: *Pupils work faithfully.* What part of speech is work? Work asserts action; hence or therefore work is a verb. The other process: Work is a verb because it asserts action. The latter process promotes guessing; it puts responsibility upon teacher to accept or reject the answer. The former process requires attention, thought, judgment. It is the scientific method: observation, facts, conclusion. Logically the conclusion should be stated last.

220. The syllogism.—A closer analysis of the mental process just mentioned shows that pupils are constantly using the syllogism. Thus in the sentence given, what part of speech is faithfully? The child observes the word and then his thought follows this form:

Whatever modifies a verb is an adverb. Major premise.
Faithfully modifies the verb work. Minor premise.
Therefore faithfully is an adverb. Conclusion.

221. **Fundamental facts in grammar.**

1. The typical English sentence has two principal parts, subject and predicate. The subject may be noun or pronoun; the predicate must be a verb.
2. All modifiers of the subject have the nature of adjectives.
3. All modifiers of the predicate have the nature of adverbs.
4. A sentence may have a third principal part, namely, a complement. An object complement may be noun or pronoun; attribute complement may be noun, pronoun or adjective. All of these parts of speech are known from drill on the first three fundamental facts.
5. Simple sentences may be combined into compound or complex sentences by the use of connectives.

222. **Development based upon fundamental facts.**

1. *Flowers bloom.* All is new: sentence, subject, predicate, noun, verb.
2. *Pretty flowers bloom early.* Known, same as 1; unknown, adjective and adverb.
3. *The pretty flowers of spring bloom early in our field.* Here we have added another adjective, a pronoun, a preposition and phrases. The adjective and the adverbial uses of these phrases are known from 2. The phrase is simply a new form.
4. *The pretty flowers of spring bloom early and late in our fields.* Conjunction is new.
5. Children like daisies.
   The daisy has petals.
   Children pluck them.
   The daisy is the day's eye.
   The daisy is pretty.

Who brought the daisies? It was she.

Here we have the purpose to present third principal part of sentence; new, names object and attribute; related old, nouns and pronouns and adjectives in third part of sentence.

6. Flowers bloom. Simple.

Summer comes. Simple.

Flowers bloom and summer comes. Compound.

Flowers bloom when summer comes. Complex.

NOTE 1. These suggestions embody a basis or type of procedure in studying all the related parts of a sentence. This matter is merely an outline; more material is required for a full presentation.

NOTE 2. The interjection may be studied with nominative absolute and other independent elements.

NOTE 3. Too much emphasis cannot be placed upon a thorough knowledge of the simple sentence. Master the declarative sentence first, and then the other kinds from form of expression appear as easy modifications of the declarative form. All the parts of speech, too, may be studied in the simple sentence. A knowledge of nouns, adjectives and verbs is a direct approach to participles and infinitives; and adding the adverb, you have the foundation for all kinds of phrases and clauses. See development lessons following.

NOTE 4. The process of development mentioned employs the maxims known to related unknown, simple to complex, from whole to parts. Interest is stimulated and apperception is assured. Teachers understand, of course, that the study of the simple sentence means more than analysis. Synthesis of given parts, original construction, reconstruction, filling blanks, and the various composition exercises will all be used to satisfy the needs of the pupils.

NOTE 5. While it is advisable to use material that is familiar and interesting, there is no reason for using sentences that do not express a valuable thought. The following sentences are suitable:

1. Birds sing.
2. Respect the flag.
3. Bees gather honey.
4. The whale is an animal.
5. Plants need air and moisture.
6. Fawns are graceful.
7. The Mohawk valley is fertile.
8. The Mayflower sailed from Plymouth.
9. Icebergs from the Arctic Ocean melt in the Gulf Stream.
10. Magellan's ship sailed around the globe.
11. The territory claimed by the Dutch was called New Netherlands.
12. Staten Island has an area of nearly sixty square miles.

223. Oral analysis.—This process does not receive sufficient attention. When used according to an orderly plan, it requires close, accurate thinking; it is a means to mental and physical poise; and it has the twofold value of developing the power of oral and written expression at the same time it is interpreting the oral or written expression of others. The diagram becomes more useful when it is supplemented by oral analysis.

224. Diagrams.—A diagram is a graphic representation of the grammatical relations in the sentence. Some systems are too elaborate for practical use, but a simple and reasonable system of diagrams means economy of time, interested self-activity of pupils, and co-ordinated multiple sense instruction. The rule of limitation of use may be put this way: Use diagrams whenever they satisfy the purpose of instruction in grammar. It is an abuse of diagrams to make them displace all oral analysis and parsing.

225. Drill.—The schools fail to give adequate drill. In the effort to cover the assigned limit of work, teachers present new matter day after day and then wonder why pupils have not

retained the matter which was so carefully presented. The average pupil will not give himself the drill alone; drill is essentially the work of the recitation period. It should be simple, specific, frequent; and instead of repeating in all the lessons in this chapter, we offer the following suggestions for kinds of drill:

1. Use sentences that clearly illustrate the point of the lesson. Unnecessary elements in the sentence are likely to draw the attention away from the one point under consideration. This is specific, deductive application to complete the inductive process. It is the passing from the general notion to the particular notion.
2. Application in sentences found in the grammar. Habituate pupils to use the text-book as authority in grammar.
3. Use sentences in history, geography, reader, etc. This is another attempt to show pupils where to find suitable material. It tends toward independent study, as every pupil has a book; it permits physical adaptability, according to sight, comfortable position, etc.; it is correlation of studies.
4. Synthesis of sentences from given lists of words, phrases, or other elements. This appeals to the constructive instinct of children. It may also be used as a stimulus in competitive effort.
5. Pupils find sentences in books or construct original sentences.
6. Memorize mottoes, maxims, or other quotations that will serve as typical illustrations.
7. Apply grammatical knowledge in writing and in criticising compositions.
8. Pupils prepare questions for oral or written review or examinations. A good question re-

quires a knowledge of the subject-matter; and experience proves that the average class will make such a requisite mastery if the teacher will use the questions furnished by the class.

9. Correlation as a preliminary drill in primary grades before beginning the study of formal grammar. "Another place where correlation may be applied is in language work. To illustrate this, take the type sentences in one of the primary grades. It is an important thing for the teacher to know that all sentences can be reduced to five primary types, and it is important to the child—not to be told that there are five types—that information is not of any use to him; but it is important for him to know how to make sentences according to those five types. The first type of sentence is simplified by the expression, what things do, as, The dog barks, Birds fly; the second, what things are, as, Men and dogs are animals. The third indicates what quality things are; the fourth, what things do to things; and the fifth, what is done to things. All the material used in other studies can be introduced in the making of sentences after these models. All thought must be expressed by one or the other of these five forms, and in thus correlating the study of the sentence the work done in the other subjects is being reviewed, while at the same time the foundation for future grammar studies is being laid."—Maxwell on Course of Study, p. 45, McEvoy's Science of Education.

226. **Parsing literary masterpieces.**—The value of parsing as an educative process should be approved as only one of the useful exercises in grammar. The sentences used in parsing

must satisfy interest and culture. The question arises, then, whether we should use literary masterpieces for this purpose. Does the dissection by analysis and parsing destroy the literary value of the selection? We quote from the Report of the Committee of Fifteen, page 49.

"A training for four or five years in parsing and grammatical analysis practiced on literary works of art (Milton, Shakspere, Tennyson, Scott) is a training of the pupil into habits of indifference toward and neglect of the genius displayed in the literary work of art, and into habits of impertinent and trifling attention to elements employed as material or texture, and a corresponding neglect of the structural form which alone is the work of the artist. A parallel to this would be the mason's habit of noticing only the brick and mortar, or the stone and cement, in his inspection of the architecture, say of Sir Christopher Wren. A child overtrained to analyze and classify shades of color—examples of this one finds occasionally in a primary school whose specialty is 'objective teaching'—might in later life visit an art gallery and make an inventory of colors without getting even a glimpse of a painting as a work of art. Such overstudy and misuse of grammar as one finds in the elementary school, it is feared, exists to some extent in secondary schools and even in colleges, in the work of mastering the classic authors."

227. False syntax.—There is some difference of opinion about the advisability of using faulty sentences for correction. The objection is supported by the argument that the child is more likely to remember the incorrect form than the correct form. He will image the incorrect form by visualization instead of remembering the correct form which he reaches through abstract reasoning. But this argument is not convincing. The writing of the correct form gives the pupils the same opportunities for visualization; and, besides, comparison and contrast will intensify the impression of the correct form. Another consideration in favor of using false syntax is the fact that

nearly all the leading text-books in grammar contain such exercises. See section 256.

"The author is utterly at a loss to conceive on what principle the introduction of faulty sentences for correction can be objected to. Specimens of bad spelling for correction are injurious, because, in English, spelling is not reducible to fixed rules, but is for the most part a matter of simple recollection, and if the eye gets accustomed to the look of ill-spelt words, it is often difficult to recollect the correct mode of spelling them. Syntactical errors are of a totally different kind. They admit of being corrected on fixed principles; and as the learner is pretty sure to meet with numerous examples of faulty sentences, both in conversation and in reading, it seems desirable that he should have some practice in the correction of those mistakes which are of most frequent occurrence. Those who object to exercises of this kind should, to be consistent, exclude from books on logic all specimens of fallacies given for the purpose of correction. Yet those who have studied and taught logic are aware that few exercises are more beneficial."—Mason's English Grammar, Ed. 1861, p. 173.

228. Types.—The material furnished in these lessons is intended to give one sound method of presenting each topic, but teachers are not supposed to think that there is no other material or no other way that can be considered acceptable. No matter what the topic for presentation may be, a tactful teacher will find other ways of adapting the work to individuals and to classes.

229. Parts of speech. Lesson on the noun.—The one fundamental fact to be impressed in teaching the parts of speech is that words are classified according to their use in the sentence. Pupils who work upon this basis find it necessary to observe the use of a word in every instance rather than to rely upon mere memory in giving definitions. Another point which needs emphasis is that the words must be used in sentences. No word can be classified as a part of speech in grammar un-

til that word is given a correct use in a sentence. Under this interpretation the teaching of nouns, pronouns, or other parts of speech from miscellaneous lists of words cannot be justified.

The old way of teaching the parts of speech required pupils to memorize definitions and then apply those definitions. It was the deductive method. Modern investigation of the process of learning requires the inductive method, as we have already shown. The same general plan of teaching all the parts of speech is therefore a combination of inductive and deductive. Let us take a lesson on the noun.

DEVELOPMENT LESSON ON THE NOUN.

I. Preparation. The preparation in this lesson illustrates an instance where the teacher should not pass much time in reviewing the work already covered in grammar. It is possible that pupils know the sentence, the subject and the predicate, but it is doubtful if much time passed upon reviewing these three terms would serve as a useful preparation for a lesson on the definition of the noun. Perhaps the best preparation in a lesson of this kind is to go directly to the presentation after telling the pupils that we are beginning to make an effort to tell the names of all the kinds of words used in speaking and writing.

II. Presentation.

1. Mt. Vernon is in Virginia.
2. Mt. Vernon was Washington's home.
3. Mt. Vernon is near the Potomac River.
4. The house has a large porch.
5. High columns support the roof.
6. Martha Washington had a pet cat.
7. A hole was cut in the door for the cat to enter Martha's bedroom.
8. An old negro watches Washington's tomb.
9. The tomb is locked.

10. The keys were thrown into the Potomac River.

This series of sentences gives enough name words to be used in developing the definitions. The series of sentences form one general thought which may be a source of interest to young children if the teacher will fill out some of the details suggested. It is not necessary to ask and answer questions here; teachers can use their own ways.

III. Application. Similar sentences may be used in applying the definition that a word used as a name is a noun. The use of simple sentences will give drill enough for one lesson. Succeeding lessons should employ sentences made from lists of words furnished and also original sentences constructed entirely by the pupils.

230. Predicate adjective and adverb modifiers distinguished.

I. Aim. To determine the correct use of the predicate adjective and the adverb modifier.

II. Preparation. Define and illustrate subject, predicate, noun, verb, adjective, adverb and adverb of manner.

III. Presentation.

1. That boy appears prompt.
2. That boy appears promptly.
3. The sun shines bright in my old Kentucky home.
4. The sun shines brightly on Kentucky homes.
5. The horses are running wild on the prairies.
6. The horses are running wildly from the prairie fire.
7. The ship returned safe.
8. The ship returned safely through the rocky channel.
9. The pupils are faithful.
10. The pupils worked faithfully.

The presentation is simply an application or drill upon the definitions called for in the preparation. The adjectives in sentences 1, 3, 5, 7, and 9 denote a condition of the subject; the adverbs in sentences 2, 4, 6, 8, and 10 express manner of performing an act. This distinction suggests the rule. Use the predicate adjective to denote a condition of the subject; use the adverb modifier to express manner.

IV. Drill. Recall the verbs generally followed by an attribute complement, namely, be, become, appear, seem, feel, look.

1. Be kind.
2. Try to become courteous.
3. You appear well.
4. You work well.
5. This distinction seems easy.
6. Do you feel good?
7. Stand and sit erect.
8. The door stands open.
9. You will grow taller.
10. You will grow rapidly.

For further drill use the device allowing a choice and have each choice justified.

1. awkward, awkwardly. The blind musician felt —— for a place to rest.
2. good, well. The child worked —— on his lessons.
3. glad, gladly. The children appeared —— when they were promoted.
4. strong, strongly. The cable is made —— enough to support a ton.
5. kind, kindly. The teacher spoke —— to the class.

Correct these errors and give reasons:

1. How are you? I am nicely.
2. She looks beautifully.
3. The team played good.

4. The food tastes very nicely.
5. Start quick and walk slow.

231. Personal pronoun and relative pronoun.—This exercise is put under one treatment to show the value of pronouns in the economy of expression. There is material enough here for two lessons.

I. Aim. To show that personal and relative pronouns are sources of economy and euphony in expression.

II. Presentation.

SECTION I.

1. Lincoln was President. Lincoln delivered the Gettysburg Speech.
2. This is Frank. Frank's declamation won first honors.
3. Mason was an active boy. Mr. Loring liked Mason.
4. See that bicycle. Harry Ransom made that bicycle.
5. The pocketbook was the prize. The pocketbook was given to the best speller.

SECTION II.

1. Lincoln was President. *He* delivered the Gettysburg Speech.
2. This is Frank. *His* declamation won first honors.
3. Mason was an active boy. Mr. Loring liked *him.*
4. See that bicycle. Harry Ransom made *it.*
5. The pocketbook was the prize. *It* was given to the best speller.

SECTION III.

By the use of the relative pronoun each pair of sentences can be combined into one sentence.

1. Lincoln was the President *who* delivered the Gettysburg Speech.

2. This is Frank *whose* declamation won first honors.
3. Mason was the active boy *whom* Mr. Loring liked.
4. See that bicycle *which* Harry Ransom made.
5. The pocketbook was the prize *that* was given to the best speller.

The sentences given in the three sections are closely related in wording and meaning so that pupils may employ their energies upon the differences in wording. Section II illustrates how a personal pronoun may avoid the repetition of nouns; the last five sentences illustrate how relative pronouns avoid the repetition of nouns and also improve the expression by uniting the two parts into one good sentence. Test the three sections by the sense of hearing and notice the pleasing effect in the last five expressions.

232. **Shall and will, should and would.**—In early English shall was the past tense of a verb meaning to *owe* or *to be under obligation to do.* In its present use with other verbs to form the future tenses, shall has lost nearly all of its early sense of obligation excepting in the second and third persons. Shall in the first person denotes simply future time; in the second and third persons, shall denotes promise, command or threat.

Will is from another old verb meaning *to choose*, *to desire*, or *to be willing to do.* It used to show that the subject had the power *to determine* the action. Will in the first person still retains the original meaning but not so in second and third persons. In these two will denotes simply future time.

Rule for shall and will. In the first person, shall expresses simply future time; in second and third persons, shall expresses promise, command, or threat. Will in the first person expresses promise, command, or threat; in second and third persons, will expresses simply future time.

1. I shall go to Europe this summer.
2. You shall remain here to study.

3. He shall study this lesson in grammar.
4. I will help you.
5. You will be ready for me.
6. He will work with us.

Should is the past tense of shall. Should has the same general uses as shall, but should, in all persons, retains its original meaning of duty or obligation.

Would, the past tense of will, is governed by the general rules applying to will.

Give reasons for shall, will, should and would.

1. Truth, crushed to earth, shall rise again.
2. We shall study.
3. We will study.
4. If I can't pray, I will not make believe.—Longfellow.
5. She could not think, but would not cease to speak.—Crabbe.
6. There is no *if* in the case. That we shall succeed is certain.—Nelson.
7. The union must and shall be preserved.—Jackson.
8. Heaven never helps the man who will not act.—Sophocles.
9. I would rather be right than be president.—Clay.
10. Herodotus wrote as it was natural he should write.—Macaulay.

233. Modes.—The study of all English presupposes the desire to interpret good English and to acquire facility in writing and speaking good English. Grammarians differ so much about the number of modes and about the distinctions between modes that it is not necessary to take a young class into these mooted questions. Our general plan of development is one of comparison and contrast. So it is in getting the different kinds of sentences from form of expression, in distinguishing attribute complement and adverb modifier, in developing the

function of participles and infinitives. So it should be in teaching modes. The declarative form of the simple sentence furnishes an illustration of the indicative mode. The same thought expressed in the interrogative form is another illustration of the indicative mode. A thought involving doubt must be expressed in the subjunctive form; while the imperative sentence gives the verb in the imperative mode. The following sentences will serve in this development:

1. The pupils study grammar.
2. The pupils are studying grammar.
3. Do primary pupils study grammar?
4. If you study well, you will understand grammar.
5. Study diligently one hour each day.

In helping pupils to discriminate the modes it is useful to impress upon them that the indicative mode expresses a *fact;* the subjunctive mode a *doubt;* the imperative mode a *command.* The doubt is the only point that is really new in this process of discrimination. The pupils are familiar with the expressions in the declarative form and the imperative form from their study of sentences from form of expression. Hence, as an aid in recognizing the expression of doubt, direct attention to the use of the connectives *if*, *though*, *except*, *unless*. Note that they simply aid in introducing a clause that is likely to contain a verb in the subjunctive mode, but the connectives alone do not make the subjunctive mode. Mode is a modification of the verb, not a modification of the conjunction.

III. Drill.

1. I hate to see things done by halves. If it be right, do it boldly; if it be wrong, leave it undone.—Gilpin.
2. If you know the quotation, you can recite it.
3. Learn this definition well, and then you can apply it easily.
4. Do you understand the indicative mode?
5. If you can distinguish the expression of a fact from the expression of a supposition, you can

distinguish the indicative mode from the subjunctive mode.

6. The subject of a verb in the imperative mode is seldom expressed.

7. If you are here, you will understand these definitions. (Fact; we know that you are here).

8. If you are present tomorrow we shall drill upon modes in grammar. (Doubt; we are not certain about your attendance tomorrow).

PARTICIPLES AND INFINITIVES.

234. The meaning of terms used.—Much confusion arises from the different classifications of participles and infinitives. This lack of agreement does not produce serious consequences in a school where any good text-book is followed as an authority, but it is a matter of inconvenience to students who have to pass various examinations. We meet the terms verbals, adjectival verbals, verbal nouns, participles and infinitives. Any word derived from a verb may be called a verbal. Some grammarians adopt verbals as the general heading and then classify infinitives, gerunds and participles as the three subordinate kinds. So it is done in Longmans' English Grammar edited by George J. Smith of the New York City Board of Examiners. Maxwell treats infinitives as a mode of the verb and then puts the gerund and the participal under the verbals. Milne considers the gerund a form of the infinitive. Reed and Kellogg prefer an explicit wording, such as, a participle used as an adjective and a participle used as a noun. For the purpose of clearness, we summarize:

VERBALS.

1. Participle used as an adjective; verbal adjective; or simply the participle.

2. Participle used as a noun; verbal noun; or gerund.

REFERENCES

Longmans' English Grammar, 144.

Maxwell's Advanced Lessons in English Grammar, 144, 155.

Milne's An English Grammar, 189.

Reed and Kellogg's Higher Lessons in English, 65.

235. Participle.—There are three points to be used as a basis in this lesson : verb, adjective, noun. In this lesson we present the adjective participle.

I. Aim. To teach the participle combining the nature of a verb and the nature of an adjective.

II. Preparation. Review definitions and illustrations of verbs and adjectives.

III. Presentation.

1. The sun rises.
2. The sun dispels the mists.
3. The sun rising dispels the mists.
4. Evangeline wandered from place to place.
5. Evangeline, wandering from place to place, sought her lover.
6. Wandering from place to place, she patiently waited her lover.
7. You recited well.
8. I heard you reciting well.
9. We, being weary, rested ourselves in the shade.

Rapid drill upon subject and predicate in each of the first three sentences. Emphatic mention of predicate verb in each of the three sentences. Then direct attention to *rising* in sentence 3.

T. What part of speech is *rising?*

P. Rising is a verb.

T. What is the predicate verb in this sentence?

P. Dispels is the predicate verb.

T. Then are there two predicate verbs here?

If pupils say yes, contrast predicate verb rises in sentence 1 and rising. If pupils answer no, go at once to the question to bring out the adjective use. Is the subject sun modified or unmodified?

P. Sun is modified by rising.

T. What part of speech, then, is rising?

P. Rising modifies the noun sun; hence, it is an adjective.

T. Rising is used as two parts of speech, a verb and an adjective. We say it participates or partakes of two natures, and so it is a participle.

Silent reading of sentences 4, 5, 6. Give time for thought. The development already done should suggest to all pupils what they are to find in these three sentences. They have before them what, where and how to study.

T. Who has found another participle? If all fail, repeat process of passing from predicate verb in 4 to adjective participle in 5.

T. Find the adjective participle in 6.

P. Wandering is an adjective participle.

Another P. Wandering is a form of the verb modifying the subject pronoun she; hence, wandering is an adjective participle.

If any pupils have failed to discover that the participle modifies a pronoun, this last answer should impress that fact. It is information from a classmate, not from the teacher or from circuitous development.

Proceed in similar manner with the other sentences. Then have definition formed. A form of a verb, not a predicate, having the nature of an adjective and a verb, is an adjective participle.

IV. Drill.

1. The pupils studying grammar are attentive.
2. Do you know the definition taught yesterday ?
3. See the pupils writing the lesson ?
4. Having finished the lesson, the class marched to the gymnasium.
5. I, knowing your ambition, offered you an opportunity for promotion.

Constructive drill follows this analytic drill.

236. Uses of participles.

1. As a noun.
   (a) Subject and attribute. *Begging* a courtesy is *selling* liberty.
   (b) Object of verb. Pupils enjoy *studying* history.
   (c) Object of preposition. We receive good by *doing* good.
   (d) Apposition. Invention, *applying* old ideas to new uses, benefits mankind.
   (e) Independent. Generally *speaking*, interest sustains attention.
2. As an adjective.
   (a) Modifying noun. Lessons *learned* from experience are costly.
   (b) Modifying pronoun. *Hearing* your voice, I returned.

237. Distinctions required.—The student must distinguish the mere adjective from the participle used as an adjective, and the mere noun from the participle used as a noun. The mere adjective does not have the nature of adjective and verb. It is simply an adjective and it usually precedes the word it modifies.

1. *Concealed* resentment is dangerous.
2. *Coming* events cast their shadows before.
3. His soul was the *pleasing* companion of his body.

4. Beauty is only a *doubting* good and *shining* glass.
5. The *growing* plant needs light, heat and moisture.

The participle used as an adjective has the double nature of verb and adjective, usually follows the word it modifies, and may have the same complements and modifiers that verbs have.

1. Keep the pupils *working*.
2. Start the ball *rolling*.
3. The complement is the part *completing* the sentence.
4. Participles, or the words *partaking* of the nature of two parts of speech, have many uses.
5. Here is a paper neatly *written*, properly *punctuated*, carefully *thought* out, and *placed* on the teacher's desk at the appointed time.

The mere noun has a single nature. It is often preceded by *the* and followed by a phrase introduced by *of*.

1. The *handling* of money pleases some people.
2. Angry *feeling* is betrayed by the countenance.
3. The mastery of grammar is a difficult *undertaking*.
4. The *groaning* of the prisoners and the *clanking* of chains were heard.
5. Our pupils study drawing, sewing, and physical training.

It is argued by some that when drawing, sewing, etc., are simply the names of subject-matter in the recitation they are nouns. Other authorities hold that as long as such words possess anything of the nature of verbs they are still to be classed as verbals. Thus Maxwell in his Advanced Grammar, page 155, classes drawing as a gerund.

John learns *drawing*.

Walking is healthy exercise.

To avoid mooted points on examinations, the student is advised to use an object after drawing, singing, etc., if he wishes to classify those words under gerunds.

1. The pupils practice drawing natural objects.
2. The children enjoy singing songs.
3. Do you enjoy reading English history?
4. Writing good English is a pleasing exercise.
5. Spelling ordinary words is not too difficult a task.

The gerund, or participle, used as a noun, has the twofold nature of noun and verb, implies or assumes action without asserting it, and may take modifiers and complements like those of a predicate verb.

1. We should encourage *reading* good books.
2. My *going* will depend upon your *coming*.
3. *Persuading* by kindness is sometimes the making of hard tasks for one's self.
4. Your *studying* now will prevent your *worrying* at the close of the term.
5. In carefully *preparing* every assigned lesson one is doing one's duty to the class and to the school.

238. **Drill on participle used as adjective; verbal, or verbal adjective.**

1. Children come rejoicing.
2. He fell at his master's feet, weeping.
3. Wounds made by words are hard to heal.
4. Your credit being good, I will trust you.
5. I, being your guardian, expected to have my way.
6. Rising to reply, Washington stood blushing and stammering.
7. The treaty having been signed, trade was resumed with Spain.
8. Pronouns denoting the person speaking are of the first person.

9. The region drained by a river system is called the river basin.
10. Columbus, seeking the back door of Asia, found himself knocking at the front door of America.—J. R. Lowell.

239. **Drill on participles used as nouns; gerunds, or verbal nouns.**

1. Let us beware of losing our enthusiasm.
2. Doing well depends upon doing completely.
3. What do you think of his writing that letter?
4. By writing slowly you may learn to write legibly.
5. Forsaking evil companions is often the first step in reform.
6. All students should form the habit of reading poetry.
7. The object in sailing west was to find a shorter route to India.
8. He that is good at making excuses is seldom good for anything else.—Franklin.
9. Being in a ship is like being in a jail with a chance of being drowned.—Johnson.
10. Talking is like playing a harp; there is as much in laying the hands on the strings to stop their vibrations as in twanging them to bring out their music.—Holmes.

240. **Drill on participle used as a mere adjective.**—Here the twofold nature is not considered; the verbal forms should be parsed as adjectives.

1. The breaking waves dashed high.
2. The creeping night stole up the hills.
3. Education is the moulding force of life.
4. Here sailing ships delight the wandering eye.
5. Now toward the early dawning east
   We speed our course away,
   With eager minds and joyful hearts,
   To meet the rising day.

There, as we turn our wondering eyes,
We view one constant show,—
Above, around, the circling skies,
The rolling seas below.
—Cape Cod Song.

241. Drill on participle used as a mere noun.—Notice that these forms are used to name an act rather than to express an act.

1. Slow traveling is tiresome.
2. The cackling of geese saved Rome.
3. The visitors joined in the singing.
4. Giving is more blessed than receiving.
5. A little learning is a dangerous thing.
6. The shearing of the sheep in Australia is done by machinery.
7. The setting of a great hope is like the setting of the sun.—Longfellow.
8. The treatment of drowning is simply to perform artificial respiration.—Overton.
9. Drawing, reading, writing, spelling, physical training and declamation come in the afternoon.
10. The firing of signal guns was telegraphing by sound. It used only the hearing. But there were other ways of telegraphing that used the sight.—E. Eggleston.

242. Uses of infinitives.

1. As a noun.
   (a) Subject. *To see* is to believe.
   (b) Attribute. To see is *to believe*.
   (c) Object of verb. Pupils like *to sing*.
   (d) Object of preposition. We are about *to sing*.
   (e) Appositive. It is easy *to find* fault.
   (f) Independent. Every object has its face, so *to speak*.
2. As an adjective.

(a) Modifying a noun. I have a lesson *to teach.*
(b) Modifying a pronoun. Teach them *to think.*

3. As an adverb.
   (a) Modifying a verb. They came *to study.*
   (b) Modifying an adjective. They are eager *to study.*
   (c) Modifying an adverb. The fruit is ripe enough *to eat.*

243. Drill on infinitives used as nouns.

1. Never fear to do right.
2. Learn to govern yourself.
3. Your aim should be to govern yourself.
4. It is not impossible to govern yourself.
5. To govern yourself is a duty in citizenship.
6. It is never too late to mend.
7. It is not all of life to live.
8. To bear our fate is to conquer it.
9. To dispute about trifles is foolish.
10. It was proposed to tax the colonies.
11. To be just is easier than to be generous.
12. To be plain with you, you have not tried.
13. It is helpful to study the life of Lincoln.
14. To submit to insult is to give occasion for it.
15. To cultivate kindness is a valuable part of the business of life.—Johnson.
16. In great crises, it is a woman's special lot to soften our misfortune.—Napoleon Bonaparte.

244. Drill on infinitives used as adjectives.

1. Have you time to study grammar?
2. Alger's stories seem to suit boys.
3. Ask them to sing patriotic songs.
4. Pupils have a desire to appear well.
5. Columbus did much to calm the sailors' fears.

245. Drill on infinitives used as adverbs.

1. There is work enough to do.

2. Are you anxious to govern yourself?
3. She is too sensible to be flattered.
4. You should strive to govern yourself.
5. You are old enough to govern yourself.
6. I paused to observe the bird's proceedings.
7. Call to see me if you happen to pass this way.
8. Irving's writings were the first to make American literature popular in England.
9. Every morning the Persian wife used to kneel at the feet of her husband and ask nine times, "What do you wish that I should do?"

246. **The infinitive without to.**—The verbs *bid*, *dare*, *feel*, *hear*, *let*, *make*, *need*, *see*, *behold*, and a few others, are generally followed by the infinitive without to.

1. The teacher bade the pupils *come* at one o'clock.
2. Would you dare *swim* in the ocean?
3. Can you *feel* yourself grow?
4. Did you hear your mother *call* you?
5. Let music *swell* the breeze.
6. Make yourself *speak* distinctly.
7. The first division need not *do* this home work.
8. Can you see the flag *wave?*
9. Behold the soldiers *march* in solid ranks.
10. Watch me *diagram* this sentence.

247. **Development: Words, phrases, clauses.**—This development shows how to proceed from the known to the related unknown. This lesson aims to secure different forms of expression for the same thought; an exercise in amplification.

I. Aim to increase knowledge of phrases and clauses.

II. Preparation. Review definitions of phrase and clause.

III. Presentation. Recall the simple sentence of two words, subject and predicate; then the added adjective modifier and the adverb modifier. Have following sentences on board:

1. The athlete is a *strong man.*

2. The athlete is a man *of great strength.*
3. The athlete is a man *who has great strength.*
4. Study *here.*
5. Study *in this school.*
6. Study *while you are in school.*
7. Tell us an *historical* story.
8. Tell us a story *about history.*
9. Tell us a story *which relates to history.*
10. The prince lived *foolishly.*
11. The prince lived *in a foolish manner.*
12. The prince lived *as a fool lives.*

Pupils know definitions of parts of sentences, parts of speech, phrase and clause. Now impress word, phrase and clause as the three kinds of grammatical elements *from form.*

All read sentence 1. Individuals name parts of sentence and parts of speech. Teacher underlines *strong.* Visualize strong. Suggest the purpose of making or finding other expressions for the same meaning. The direct statement of the purpose of this recitation will be enough to encourage a class to select, discuss and define the phrase elements and the clause elements. These twelve sentences will furnish the analytic drill. For synthetic drill the following italicised words are suitable for expansion:

1. We respect an *honorable* pupil.
2. Washington arrived *punctually.*
3. An *honest* effort will be rewarded.
4. *Diligent* men are usually happy.
5. Franklin arose *early.*

NOTE—The presentation in this lesson is essentially a drill. This shows that the five formal steps need not be rigidly followed in all lessons.

248. Drill on adjective clauses.

1. I that speak unto thee am he.
2. The evil that men do lives after them.
3. He is well paid that is well satisfied.

4. Men must reap the things they sow.—Shelly.
5. Words are the only things that live forever.
6. Put your trust in those whom you have tested.
7. He serves all who dares to be true.—Emerson.
8. Blessed is he who has found his work.—Carlyle.
9. He that plants trees loves others besides himself.
10. Choose carefully those with whom you will associate.
11. Time, which deadens hatred, secretly strengthens love.
12. Sunday is the golden clasp that binds the volume of the week.
13. That that that that boy used should have been a which.
14. We never tell our secrets to people who pump for them.
15. California is the state whose mines became known in 1849.
16. Self-respect is the noblest garment with which a man may clothe himself.
17. The power which brings a pin to the ground holds the earth in its orbit.
18. He who has resolved to conquer or die is seldom conquered.—Corneille.
19. Memory is the only paradise out of which we cannot be driven away.—Richter.
20. It is a belief in the Bible which has served me as the guide of my moral and literary life.—Goethe.

249. Development: Concord of relative pronoun and antecedent.

I. Aim. To show that the relative pronoun need not agree in case with the antecedent.

II. Preparation. Define pronoun, relative pronoun; name the properties of nouns and pronouns.

III. Presentation.

1. You are the pupils who make the school.

2. You are the pupils whose records give this school its reputation.
3. You are the pupils whom the teachers trust.
4. I dislike an eye that never twinkles.—Longfellow.
5. Life is a bubble which any breath may dissolve.—Greeley.
6. He is a free man whom truth makes free.—Dryden.
7. No man is born into the world whose work is not born with him.—Lowell.
8. Construct a sentence which will have a relative pronoun in the nominative case.

This lesson is an opportunity for real self-activity. It is application rather than the presentation of new matter. There are four inquiries for each sentence.

What is the relative pronoun?

What case is the relative pronoun?

What is the antecedent?

What case is the antecedent?

Thus in the first sentence *who* is the relative pronoun, nominative case; pupils is the antecedent, nominative case. Here the pronoun and antecedent do agree in case. Take the second sentence. The relative pronoun *whose* is possessive case; the antecedent pupils is nominative case. The pronoun and the antecedent do not agree in case. Likewise in 3, 6, 7, and 8.

IV. Drill. For further effective drill have pupils recall, find, or construct sentences to prove that the relative pronoun need not always agree in case with the antecedent.

250. **Development: The noun clause.**

I. Aim. To outline a plan of teaching the noun clause. This plan is a simple way of passing from the

known uses of nouns by substituting a clause for each specific use of the noun.

II. Preparation. Review uses of nouns as illustrated in the sentences. Say that this lesson in grammar will use material taken from a discussion in astronomy. Some astronomers say that every star is like the sun in brillancy but the stars appear like small lights simply because they are so far from us. The statement spoken of in these sentences is the statement that stars are suns.

1. Subject. The statement is believed.
2. Object. Some people believe that statement.
3. Attribute. It is an interesting statement.
4. Object of preposition. Have you any doubt about the statement?
5. Appositive. This belief or statement is fascinating.

III. Presentation. The preparation has gone directly to the points to be emphasized, namely, the principal uses of nouns in sentences. The pupils know the definitions of phrases and clauses. Now their efforts will be directed toward substituting the clause for each use of the noun in the sentences given.

1. That stars are suns is believed.
2. Some people believe that stars are suns.
3. The statement is that stars are suns.
4. Have you any doubt about whether stars are suns?
5. The statement that stars are suns is fascinating.

IV. Drill. Two kinds of drill are suggested here, namely, interpretation of sentences given, and expansion. The constructive experience in making sentences to illustrate all the uses of noun clause is also advised.

1. Let us see how the earth revolves.
2. My desire is that you may become useful men and women.
3. The opinion that children are naturally bad is not favored by me.
4. Have grammarians any proof of what they say?
5. Nature teaches that there is order in her ways.
6. That you are ambitious is proved by your record.
7. The question is whether I ought to do it.
8. Can you understand that a noun clause is used like a noun?
9. Franklin learned that self-help is one way to success.
10. Trouble teaches how much there is in manhood.—Beecher.

Further drill by substituting and expansion is valuable in teaching the specific uses of noun clauses. Such a process in teaching is both natural and logical. It is suggested that pupils expand the italicised parts into clauses.

1. The teacher asked *the pupils to study.*
2. We believe *in the heroism of Nathan Hale.*
3. Have you read *of Arnold's sad death?*
4. *The beauty of Mt. Vernon* is fascinating.
5. Grant proved his *ability.*

251. Drill on noun clauses.

1. I saw that you were faithful.
2. Galileo taught that the earth moves.
3. We believe that the soul is immortal.
4. Many men advocate whatever seems popular.
5. Can he hold the position? is the question.
6. Where Warren fell is not precisely known.
7. That he is rich does not mean that he is happy.
8. The charge is that you have neglected your duty.

9. Who wrote the Book of Job is not positively known.
10. Much will depend upon how you write your answers.
11. It is not work that kills men; it is worry.–Beecher.
12. The good is always the road to what is true.—Hamilton.
13. I regret that I have but one life to give to my country.—Hale.
14 "Beautiful creature," said the fox, "you sing like a nightingale."
15. One would think that the fate of our country depends upon who will be our next president.
16. Have you any explanation of why you say that noun clauses are used as nouns?
17. The world will little note nor long remember what we say here, but it can never forget what they did here.—Lincoln at Gettysburg.
18. If ever it is a question whether you or the flag must perish, you will instantly choose that it shall not be the flag.—W. T. Sherman.
19. Have we not learned that not stocks nor bonds nor stately houses nor lands nor the product of the mill is our country? It is a spiritual thought that is in our minds.—Benjamin Harrison.
20. That the daring barques of the Northmen had long before found their way from Greenland to the coast of North America is likely, though not certain. What is certain is that nothing more came of their first visit.—Goldwin Smith.

252. **Connectives: Explanation and drill.**—Pupils have already had some uses of the conjunction, the relative pronoun and possibly the conjunctive adverb. The aim of this lesson is to give breadth to their knowledge of connectives. This

aim may be attained by analysis to find illustrative uses and then by synthesis to impress those uses.

I. CONJUNCTIONS.

1. Words. Boys *and* girls study connectives.
2. Phrases. Pupils study at home *and* in school.
3. Independent clauses. Some pupils study at home *and* then they recite well in school.
4. Noun clause. Teachers know *that* pupils need drill on connectives.
5. Noun clause. Can you tell *whether* you understand this or not.
6. Adverb clause of time. Careless people speak *before* they think.
7. Adverb clause of cause. Napoleon was sad *because* he was in exile.
8. Adverb clause of condition. *If* you understand, let us proceed.
9. Adverb clause of purpose. We study *that* we may prepare for successful living.

   Correlative conjunctions mutually relate to each other. They should be placed before similar parts of speech or before corresponding groups of words.

10. Flattery corrupts *both* the receiver *and* the giver.—Burke.
11. There is nothing *either* good *or* bad, but thinking makes it so.—Shakespeare.
12. Try to observe *whether* to speak *or* to be silent.
13. Man is *neither* the vile *nor* the excellent being which he sometimes imagines himself to be.—Beaconsfield.

    Relative pronouns. Used in adjective clauses. Who, which, what and that are the common forms. See section 248 for illustrations. The pronoun is often omitted, as in the following sentences.

1. This is the lesson you will learn.
2. Cicero is the orator you mentioned.
3. Connectives is the topic the teacher assigned.

II. CONJUNCTIVE ADVERBS.

The name is derived from the double function of conjunction and adverb. First illustrations are in adverb clauses.

1. Time. You learn easily *when* you are interested.
2. Place. Cattle will graze *where* the grass is best.
3. Manner. The Indians live *as* their forefathers lived.
4. Comparison. New York has a better harbor *than* Baltimore has.
5. Degree. The greater a man is, the less he is disposed to show his greatness.—Channing. (Here the first *the* is an adverb modifying greater; the second *the* is a conjunctive adverb modifying the adverb less and connecting the two clauses. The principal clause is The greater a man is.)

Conjunctive adverb in adjective clauses. Why, when and where are the common forms, and they are frequently associated in this way; reason why, time when, place where.

1. Give a reason *why* you study grammar.
2. This is the time *when* you study grammar.
3. This is the place *where* you study grammar.
4. The child trusts because it finds no reason in itself *why* it should not.—Holland.
5. Some schools are places *where* laziness becomes habitual.
6. The place *whereto* he came was an abandoned mine.
7. This great world is the mirror *wherein* we are to behold ourselves.—Montaigne.

8. The play is the thing
Wherein I'll catch the conscience of the king.
—Shakespeare.

9. Not a soldier discharged his farewell shot
O'er the grave *where* our hero was buried.

10. Is patriotism a narrow affection for the spot *where* a man was born?—Fisher Ames.

III. RELATIVE PRONOUN.

See illustrative uses in sections 247 and 248.

253. Distinctive uses of connectives illustrated.—Use in the sentence determines the specific classification of connectives. Take *as* for illustration.

1. Strong men wept *as* the procession passed. Conjunctive adverb of time.
2. Grammar is as easy *as* arithmetic is. The first as is an adverb of degree modifying the adjective easy; the second as is a conjunctive adverb of degree.
3. Your place has been filled, *as* you came too late. Conjunction.
4. There are such pupils *as* one could desire. Relative pronoun.

254. Synthetic drill on connectives.—Construct sentences to illustrate the following:

CONJUNCTIONS.

1. Coordinate: and, but, or.
2. Expressing cause: as, since, because.
3. Condition: if, unless, except.
4. Concession: though, although.
5. Purpose: that, in order that.

CONJUNCTIVE ADVERBS.

1. Time: when, before, after.
2. Place: where, whence, whereto.
3. Degree: as-as, the-the.

4. Comparison: than, as.
5. Why, where, when, introducing adjective clauses.

RELATIVE PRONOUNS.

1. Who, whose, whom, which, that.

255. Fill blanks, tell kind of connective, and classify dependent clauses:

1. ——— you have nothing to say, say nothing.
2. ——— I admire his courage, I consider him cruel.
3. Do not go ——— the sun has set.
4. Holmes wrote ——— he amused others.
5. I am proud ——— I am an American.
6. ——— any one attempts to haul down the flag, shoot him on the spot.—John A. Dix.
7. We join ourselves to no party ——— does not carry the flag and keep step to the music of the Union.—Rufus Choate.
8. There is no language or speech ———their voices are not heard.
9. He will neither come in ——— go out.
10. I see no reason ——— you should not succeed.
11. You cannot succeed ——— you work.
12. The moon rose ——— the sun had set.
13. ——— he fails to repay me, I will trust him.
14. These are the pupils ——— future will determine civic questions.

256. Exercises in false syntax.—These sentences cover some of the common faults in writing and speaking:

1. It is me.
2. I done that.
3. I seen him.
4. This here one.
5. Do like I do.
6. Let you and I study together.
7. You are better than me in arithmetic.

8. I have got back.
9. Not as I know of.
10. I have saw him.
11. Who do you see?
12. He had laid down.
13. What are the news?
14. Set down and rest.
15. I had ought to go.
16. He was to Henry's.
17. Don't never do that.
18. Can you learn me?
19. They returned back.
20. It was her who called.
21. He must stay to home.
22. Did you see them men?
23. I do not like these kind of sentences.
24. This is the best of the two.
25. I had rather write.
26. I only want five dollars.
27. You hadn't ought to go.
28. Continue on in this way.
29. Who does this belong to?
30. He had near ten dollars.
31. We had an awful nice time.
32. I expected to have seen him.
33. Either of them are rich.
34. I have a couple of dollars.
35. He died with consumption.
36. I guess I can do this work.
37. The two first men are strongest.
38. They will go from hence next week.
39. He has four brother-in-laws.
40. It is funny how long she stays sick.
41. Henry and John is coming.
42. He dropped down into the water.
43. They differ between one another.

44. See that 'ere bird.
45. There's lots of them in schcol.
46. I do not know nothing about it.
47. I went to New York, you know, and when I came back, you see, I entered school.
48. You are not as careful as you should be.
49. A lady wants to sell her piano as she is going abroad in a strong iron frame.
50. Wanted a room by a man ten feet by fifteen feet.

Chapter XII. Geography.

257. The old and the new.—In the widespread criticism of old ways of teaching, geography has received its full share of censure. Slavish following of the text-book, memorizing long lists of names, and the study of unrelated facts are among the faults mentioned. The new presentation of geography makes man the center of interest by relating all the facts to the welfare of mankind. This is what is meant by saying that "geography should be invested with human interest;" and that "the aim in teaching geography should be to give the pupil knowledge of the earth as it ministers to human life."

258. Illustration.—The old way of studying the rivers of the United States required a description of each river under the form "rises, flows and empties." Today those three items are subordinate facts in the larger effort of finding what each river does to aid agriculture, manufactures, commerce and the pleasures of life. Aside from the use of drainage, the student studies the correlated facts of science, literature, history and geography until every important geographical fact becomes a related cause in the past, the present and the future progress of humanity.

"Once there was no geography of the Rocky Mountains, for example, except a study of their location and elevation and their representation on colored maps. Today the student studies its Yellowstone, its Salt Lake, its palisades, parks, and canons, but he soon runs aground in the legitimate fields of geography, and finds himself encroaching upon the territory of geology or botany, zoology, chemistry, physics, or mineralogy. Even in an elementary discussion of the influences of these mountains upon the climate of the continent, many facts must go unexplained without the principles of natural philosophy. That geography of the Rocky Mountains is

incomplete which does not include a typical and detailed study of its industries, of its mining, smelting, lumbering, herding, and its method of agriculture and irrigation. A study of the various peoples of the mountains may take the direction of sociology, economics, ethnology, and government. The geography of the Rocky Mountains thus approached, and only thus, may give a true insight into, and an ability to interpret, that part of the world."—Heeter, Commercial and Industrial Geography, N. E. A. Report, 1907, p. 509.

259. Broader educational use.—This modern conception of the industrial value of geographical knowledge is proof enough that the study of geography is more than a mere memory process. The following discussions will show the necessity of employing observation, memory, imagination, reason and judgment in every complete study of a topic.

260. New York City course of study.—The general course of study for New York City was adopted by the Board of Education May 27, 1903; revised June 21, 1905 and June 11, 1907; and the syllabus in geography was adopted by the Board of Superintendents in October, 1905, and revised in July, 1907. This last revision embodies the consensus of opinion of the best thinkers on this subject, and so some parts of the suggestions on geography are taken verbatim, as in sections 261 to 264 inclusive.

261. Introductory note.—Geography has been defined as "the study of the earth as the home of man." How this physical environment aids or hinders the development of man, and what man has done to modify, adapt, and utilize his physical environment, constitute the subject-matter of geography. The human feature—man's achievements in industry, commerce, and political organization—should predominate in the study. As Dr. Harris has stated the proposition, the pupil "must begin with the natural differences of climate and lands and waters and obstacles that separate peoples, and study the methods by which man strives to equalize or overcome these

differences by industry and commerce, to unite all places and all people, and make it possible for each to share in the production of all."

The objects of teaching geography may be classified as practical, intellectual, and ethical.

262. Practical purposes.

1. There are many geographical facts, such, for example, as the location and characteristics of important cities, mountain systems, and large rivers, which it is a disgrace and a misfortune not to know. Every public school child must be made to know such matters so thoroughly that he will never forget them.
2. Maps and plans are now constantly used in newspapers and in business. The child must, therefore, be made to understand their conventional symbols and to become expert in referring to them and interpreting them.
3. The child, as a member of a great manufacturing and commercial community, should be familiar with the resources and productions, raw and manufactured, of his own country, and of all countries with which we have dealings; he should know the chief markets, home and foreign, for our goods; he should learn the quickest, safest and cheapest trade routes; he should be able to form conceptions of the kind of goods which home and foreign customers require from New York. While it cannot be expected that a child's judgment on such matters will be highly trained, he should know how and where to find such information when he needs it.
4. Our current literature, magazines and newspapers, assume an intimate knowledge of

geography on the part of the reader. School training in the subject should, therefore, result in the ability to determine quickly, by the use of an atlas, gazetteer or other work of reference, the location and characteristics of places, the names of which are met with in reading or required in business. Special training along this line is required during the last three years of the course, under the heading, "Location of places associated with important current events."

263. Intellectual purposes.

1. Geography may be made to train the *observing powers*. As far as possible everything taught should be illustrated from what the child may see in this city. This statement holds good not merely of the introductory lessons in home geography, but of the lessons throughout the course. Representatives of the chief races of men, every conceivable product of man's skill and industry, every modern means of transportation and communication, may be observed in this city, while our parks and museums are full of objects of historic and contemporary interest. It is suggested that each pupil be furnished with a small blank book in which to record out of school the results of his observation.

2. It may be made to train the *imagination*. At every step the pupil is called upon to build up conceptions of objects unseen and places unvisited through images derived from things seen, from pictures and from verbal descriptions.

3. Rightly taught, geography trains the *memory*. The great vice, however, of geography instruction is the learning by rote of lists of names, (rivers, cities, etc.), or the descriptive matter in the text-book. To avoid this barren and wasteful process, the facts of geography should be linked by natural associations. "What association so strong," asks Professor Laurie, "as the association of all our knowledge of a subject with the familiar objects of our daily lives, out of which we have made the teaching of geography spring? What association so strong as the organic connection which this mode of teaching establishes in the mind?" Names of places, whenever possible, should be associated with important historical events and with literary allusions.

4. Geography should also be made, particularly during the last three years of the course, to train the *reasoning powers*. When you ask a child to classify the natural features of a country, rivers, for example, according to some common property, as navigability, or the products of a country, as necessaries and luxuries; and still more when you ask him to generalize after he has classified, as for instance to determine the status of a people after a classification of their products, you are training him to reason.

264. Ethical purposes.—The ethical purposes of the teaching of geography are to lead to the moral lesson that all men must work and that each man should so work that his labor will benefit not only himself, but the whole community, and that what is true of individuals is equally true of nations. "There is probably," says Professor Laurie, "no one subject so

prolific of matter for independent thought and judgment on the affairs of life, and the destiny and duty of man. By means of it, too, we not merely furnish moral material, so to speak, but we extend the sympathies of the pupil, and lay the foundation of that sentiment of humanity which is the necessary counterpoise to narrow and parochial prejudices."

In order that these matters may be more fully understood, the pupils must also be led to consider the earth in relation to the sun, its forms, its motions, and such resultant phenomena as the seasons, air and ocean currents, and rains.

265. Col. Parker quoted.—The first steps in geography should give the child the means to imagine that which he cannot see. Begin with the forms around you; the close and careful study of the chains or ranges of hills, valleys, plains, coast-lines, springs, brooks, rivers, ponds, lakes, islands and peninsulas. Study them as you do objects in Botany or Zoology. Take the children out into the fields and valleys; return to the schoolroom; let them describe orally what they have seen; then mould and draw it; and, finally, have them describe the objects they have seen by writing. Teach them distance by actual measurement; boundaries by fences, and other limitations; drainage by gutters, and the flow of water after a rain. Let them find springs, and discover how the water comes out of the ground. Have them bring in different kinds of earth—gravel, sand, clay, and loam. I have not time to give you any regular order of subjects—if there be one. Begin with one object, study it carefully, then take another and combine the two and so on. I wish to call your attention especially to the three great means of thought expression: first, the concrete expression; second, drawing; third, language. The first may be done by mouldings and obtained from an iron-foundry. Have pupils tell you what they have seen by moulding the form. Second, have them draw everything they see in relief and horizontally. Third, describe what they have seen orally, and then in writing. Use these means continually in teaching geography.—Talks on Pedagogics, p. 125.

266. Home geography.—No matter where the school may be located, the first lessons in geography should be an observation of the facts at hand. Schoolroom, schoolyard, district, town, county, etc., make a series in going from the known to the related unknown. But what facts should a child know as a basis for geography?

267. Fundamental facts.—A knowledge of geography implies a knowledge of location, direction, form, size, and distance. A further analysis might require space, time, proportion and other elements, but our purpose is to ascertain useful essentials rather than to try to make a complete category.

268. Early lessons.—Nature study and object lessons are a preliminary preparation for geography. In this way pupils acquire the elementary knowledge of soil, climate, productions; animal, vegetable and mineral life; and the general needs of mankind. This concrete approach to technical geography invites the use of approved methods and devices, and so it is probable that the *plan* is made familiar as a means of getting a concept of forms. The word plan in this use means a representation of anything drawn on a plane. Thus the point of the pencil is represented by a dot; the pointer, by a straight line; the pane of glass, by a rectangle; the face of a cube, by a square; the sphere, by a circle. The top of the child's desk furnishes an easy plan. Drawn full size, the plan requires actual measurement; a smaller size calls for the use of proportion and scale. Other plans may include the room, one floor of the building, the yard, and a part of the district or the city. Right here in this early work, distinguish picture and plan or map. Show picture and plan side by side.

269. Points of compass.—The exercises 266 and 268 may be used in teaching the points of the compass. North, east, south and west can be fixed in mind by positions of objects on each desk. Enlarge the application by indicating directions in room, yard or district. Use sunrise and sunset as aids. Locate north star, face it, and then apply the old way of

stretching arms, right toward the east and left toward the west. Mention use of shadows and blowing of smoke as means of determining directions. Study wall map and apply knowledge. Locate a place and have children point to neighboring parts and tell directions. For more practical application, have pupils walk toward certain designated places. This exercise gives a personal relation to the facts. Its use makes pupils realize that north is not always up nor is south always down.

270. Distance.—Actual measurement of familiar things must always be one way of acquiring the concept of distance. Time required in traveling is another equivalent of distance, especially with city children. The average child will speak of the length of Brooklyn Bridge as twenty minutes rather than a mile. Distance as an element of size in geography is likely to remain an imperfect estimate.

271. Maps.—The study of the schoolroom gives a larger conception of shape, size, location, cardinal directions, scale and proportion. The intermediate points northeast, southwest, etc., should be taught. The placing of pupils in the principal points in the room is a concrete way of sustaining interest. It gives reality to the exercise; and right here the pupils can begin to use their constructive imaginations by making little journeys in the room. Name directions to and from which they travel. The map of the room requires another application of measurement according to a scale. Desk, library, and other large objects should be located on map but the location of seats should be deferred. Too many items lead to confusion. This selection of important objects is the first act in the formation of the habit of observing the essentials in later map study.

The next step is simply a larger application of the ideas already gained. In cities, it may be a map of one floor of the school building; in rural schools, the yard is better because it puts pupils into contact with the realities of geography. The pupils' homes are still objective points of interest, but hills

and valleys, woods and growing crops are also inviting forms of educative material related to the welfare of man. All these are interesting aids in fixing locations, applying directions, and training the pupils to image a map of all the points observed.

272. Models.—The exercises already suggested are means of training the observation. At the same time the memory is developed. When it is not possible to observe the actual forms of land and water, models and pictures are supplemental aids. Models may be made of clay, sand, putty or paper. Clay and putty are serviceable for permanent illustrations. Moist sand is desirable because it can be used many times. Paper pulp is light and inexpensive, and it is easily colored to represent different elevations. The pulp is prepared by tearing paper into small pieces, soaking it, kneading it, and then draining off the water. It is easily worked into shape to represent land forms. Use glue or mucilage to fasten it to heavy paper or board.

To illustrate rivers, lakes or other forms of water, build the model upon blue or green paper or upon a pane of glass. Then mould the land forms but leave paper or glass exposed to illustrate water.

273. Constructive imagination.—The use of observation as a process in elementary work in geography has already been shown. Likewise for the first uses of the memory in retaining geographical information. As soon as pupils are required to think of forms or conditions which they have not observed, the constructive imagination is brought into use. A familiar pond may be enlarged by the constructive imagination to make a lake; the neighboring hill can be increased in size till it becomes a mountain; the valley stretches to limits beyond the power of human vision, and it becomes a plain. All the facts observed in home geography are applied to locations in other parts of the earth; the streets, the houses, and the public buildings in the native village have to be transplanted and

modified to make the image of a foreign city. Thus it is that in nearly every mental act in the broader study of geography the constructive imagination presents to the mind the images of things which can be thought of although they are not actually observed. This power of the mind is also employed in constructing models, making maps, in getting the thought from oral or written descriptions, and in making commercial trips to the principal ports of the world.

274. Analytic and synthetic methods.—The analytic method of teaching geography begins with the globe as a whole. It divides the surface of the earth into land and water and then subdivides the surface into islands, peninsulas, continents, rivers, lakes, oceans, etc. The advantages claimed for the analytic method are the following:

1. Whole to parts.
2. Early familiarity with the globe.
3. Better view of relative position, size, form, divisions of land and water.
4. The globe enables the teacher to explain causes of day and night, change of seasons, etc.

275. Synthetic method.—The synthetic method of teaching geography begins with the geography of the home and the schoolroom and then proceeds to the school yard, the neighborhood and the larger political divisions. It begins with the island, peninsula, valley, hill, river or lake, which the child can see, and then proceeds by use of the imagination to the other forms which the child cannot see. The advantages claimed for the synthetic method are the following:

1. Interest in familiar objects.
2. Known to related unknown.
3. From the near to the remote.
4. Concrete to abstract.
5. An inductive method.
6. It gives the pupil a fundamental geographical knowledge and enables him to pursue the study alone. In other words, it is a direct way to self-activity.

Both analytic and synthetic methods are used. The latter is used in beginning geography in 4 A, the pupils making a map of the schoolroom and one floor of the school building as an introduction to the study of the map of the City of New York. Home geography covers location, nationalities and local history in such a way that the pupils become familiar with the industrial, social and civic relations. The analytic treatment of the earth and its subdivisions is also given in 4 A, using the globe. Thus the advantages claimed for both methods are utilized.

276. Excursions.—Excursions to fields, parks, and museums, to docks and water fronts, to centers of local industry, manufacturing establishments and sources of supply, and to historical buildings, monuments and tablets are recommended. Constant appeal should be made to the individual observation and judgment of pupils.—Introductory Note in Geography, New York City Course of Study.

The mode of learning facts by means of excursions is a concrete approach to vivid ideas. A preliminary discussion in the classroom prepares the mind for immediate and active receptivity in the fields. The facts of local environment are learned so that pupils may begin early to adjust themselves to their environment.

A second value of such facts is the acquisition of types of knowledge. These types are employed by comparison and contrast in studying similar facts or conditions in other parts of the world. Remember that the excursion itself is not the type of knowledge; the type is what is learned. Thus the study of a gas plant is a type for the study of other gas plants; one bicycle factory furnishes data for a type of knowledge in that line.

A third value of information acquired on excursions is economy in the act of learning. The lesson is concrete; the conditions are interesting; the class is under social stimulus; exercise, circulation and respiration favor good physical support for mental activity.

Fourth, the facts acquired do not admit adequate presentation within the scope of elementary text-books. Take, for instance, a canal. The topic is the construction and operation of a lock. A quarter of an hour in observing the passage of a boat from a lower level to a higher level will give an intensity of impression that is not within the possibility of schoolroom teaching.

Fifth, correlation of industries. Actual contact with the various unified forms of industry will tend to put the children into sympathy with the conditions requiring co-operative adaptation in later life.

277. McMurry on excursions.—A detailed treatment of excursions and types in teaching third and fourth grade geography is given in Special Method in Geography by Charles A. McMurry. (The MacMillan Company).

278. Order of treatment.—The Report of the Committee of Ten, page 211, suggests an order of treatment based on mental processes. Quoted in sections 278 to 282 inclusive. "Reduced to a sentence the scheme is: first, see; next, reproduce; then study the productions of others, and, meanwhile, ponder and reason on all.

279. Representative geography.—Immediately after the making of observations should come their reproduction in the form of descriptions, sketches, maps, models, etc. The instruction of the teacher falls far short of its highest efficiency if the early work is merely observational and receptive. The great end of education is to create productive ability. One important form of this is representative production. Besides having value in itself, the description of features that have been seen and their representation by sketches, maps, or models reacts upon the observational work and induces a clearness, sharpness, and definiteness that it would not otherwise be likely to take. Not only this, but it leads the scholars to realize what maps, descriptions, etc., really mean.

280. **Derivative or descriptive geography.**—When pupils have gained true and vivid basal ideas by observation and have, by reproducing these, acquired a realistic sense of the meaning of maps and an ability to read them, in the full and proper sense of the term, they are prepared to pass on to a formal study of descriptive geography. In this, the observational and representative work of others than themselves is made the basis of study. The pupils are not now studying the earth's surface but 'a description of the earth's surface.'

281. **Rational geography.**—It has already been urged that the pupils should be induced to observe changes and processes as well as the simple passive facts of geography, and that there should thereby be laid the foundation for an understanding of the origin, the development, and the future history of geographic features. This is the introduction of rational geography, as distinguished from the mere noting and memorizing of facts. This phase of the subject which leads the pupils into the reason of things, should be assiduously cultivated, for it is the soul of the science. It should, however, be carefully adapted to the capabilities of the pupils, particularly in the earlier stages of the study. They should not be forced beyond their capacity to comprehend the nature of the agencies that have rendered geography what it is. On the other hand, there is an equal danger of underestimating the capacities of pupils to see into the reasons for natural operations.

It is not recommended that rational geography be disassociated from observational and descriptive geography, but rather, on the contrary, that it be intimately connected with these and that it be introduced so as to give them life and significance.

282. **Observational geography.**—In the judgment of the Conference, observation should go before all other forms of geographical study and prepare the way for them; its object being (1) to develop the power and habit of geographic observation, (2) to give the pupils true and vivid basal ideas, and (3) to arouse a spirit

of inquiry and a thirst for geographical knowledge. This work of observation should begin with those features that lie immediately about the pupils and so fall easily within the reach of their direct study and ready comprehension. In rural districts, the natural features of the surface will obviously form a large part of the study, while in cities, the artificial features must largely take the place of these. In the one instance, natural geography, as seen in the forms of the land, the hills, valleys, plains, meadows, divides, streams, lakes, etc., will predominate, while in the other artificial or humanistic geography will receive leading attention, as streets, railways, wharves, harbors, parks, plots, wards, etc.; but something of both these groups of subjects may be found and utilized in both localities. Neither should be neglected, for the pupils need not only to acquire clear ideas of the things by which they are chiefly surrounded but type ideas of the things which characterize other localities and of which they need to form correct ideas without being able to see them. Observation, however, should not be confined simply to the passive fixed features by which pupils are surrounded. They should observe the agencies that produce surface changes, such as winds, rains, floods, thawing, freezing, cultivation, etc. The temporary streams that follow heavy rains represent on a small scale many of the natural processes by which surface features are produced. From these immediate agencies, the observations should extend to the phenomena of the weather and the climate, such as temperature, winds, clouds, seasons, etc. * * * * * * * * * * As a step toward the study of the distribution of plants and animals and an insight into their dependence upon temperature, soil, food, etc., the pupils should be encouraged to observe the differences of plants on uplands, lowlands, marshes, etc., and upon sandy, clayey, gravelly or stony ground, and to note the habitual dispersal of animals and insects in the neighborhood, and also their relations to each other, as in forming or frequenting forests, prairies, meadows, etc. As a step toward the study

of the human elements in geography, observations should be made upon the population and its distribution, upon home occupations and productions, upon local political boundaries, as wards, school districts, city or town limits, etc., and upon the location of cities, villages, railways, canals, etc."

283. **Concentric circles.**—The arrangement of subject-matter in any course of study may be made so that the elementary facts of a subject are treated as fast as pupils are able to master those facts. Then in a later grade the more difficult facts are presented after a review of the elementary facts already mastered. This process of enlarging the scope of knowledge as pupils pass from grade to grade has been termed the arrangement in concentric circles. Many of the new textbooks in the various subjects are made according to this plan. The old method attempted to master all essential knowledge of any part of a subject before passing to another chapter which dealt with another phase of the same subject. It is claimed that the plan of concentric circles is in harmony with the interest and the ability of pupils.

This arrangement in concentric circles, or cycles, is known as the spiral method in geography. This plan of arrangement is used in nearly all the modern courses of study although there are some adverse criticisms of it. In teaching the circle of simpler facts, some teachers fail to give enough information, while others pass beyond the elementary circle into the fields of information which are supposed to be reserved for another grade. These two conditions are likely to make children show a lack of interest as soon as another teacher begins to review or enlarge the circle of information already covered.

284. **Illustration of concentric arrangement.**—The following outline for five grades illustrates the cycles in geography.

4A. Home geography, local history, the earth. Form and surface; the continents; the oceans; great islands and groups of islands; great seas, gulfs and bays.

4B. The earth : motions, zones. Eastern and western hemispheres, world stories, duties of citizens and public officials.

5A. The earth: seasons, latitude, longitude.

5B. United States: representative states in each group. New York and the City of New York.

6B. South America, Canada, Mexico, Central America and West Indies. Location of places associated with current events.

7B. Asia, Africa, Australia, and Island Groups. Places and current events.

8A. Mathematical and physical geography. Places and current events.

8B. Review of political and commercial geography. Places and current events.

285. Causal relations.—In the study of geography it is possible to memorize all the important facts about topography, climate and human progress, but that knowledge would not be considered satisfactory in content or method. Every part should be associated with cause and effect. Topography modifies climate, and both topography and climate affect man. Man, in turn, converts many of the physical conditions to his own advantage. The tracing out of all these mutual conditions as causes and effects employs the reasoning powers in getting what is known as causal relations.

286. Causal series.—Recall the criticism of the old ways of teaching geography by making it a memory process. The explanation of causal relations already given is another way of showing that the modern teaching of geography appeals to the other powers of the mind. The processes required for reason and judgment are employed in all phases of the work from 4A through 8B. The arrangement of topics in such a way that the causal relations appear as a series gives rise to the term causal series. The following topics constitute a causal series: (1) Location, (2) resources, (3) industries and occupations, (4)

products, (5) commerce, (6) chief cities, (7) social development. See latest outline suggested in Plan of Study for 1907, section 292.

287. Man and nature.—Thus the interpretation of causal relations in geography involves the reciprocal relations of man and nature. We quote from an article on Commercial and Industrial Geography by Superintendent Heeter of St. Paul, N. E. A. Report, 1907, page 508.

"While climate and topography have operated singly and together in the distribution of life and both have played an important part, not only in the making of history, but in determining the customs and achievements of every people, yet man has not been a slave to geographical conditions. He has gone forth to modify, to rise above environment, to multiply, and to subdue the earth, and there is a human, as well as a natural, interest in all this new study.

'Tis true, man has populated the earth, the Northland and the Southland, from Scandinavia to Siberia, from Abyssinia to the islands of the sea, but wherever he has gone, he has clad himself to meet the conditions of climate; he has built to withstand the tests of season; he has labored for wholesome food; and has forced the earth to yield up more than her native stores. The very form and character of his effort, as revealed by the apparatus in organization of industry, show not only the process of adjustment to native environment, but a determination and a success in rising above all natural limitations. Thus the Esquimaux labors and invents, but not the same as the nomad of the desert, the planter of the flood-plain, the ranchman of the foot-hills, or the lumberman of the camps. The great double question, then, confronting the student of geography today is, first, what physical and climatic conditions have directly influenced the different peoples of the earth, their modes of life, and their activities? Second, what have these people in turn done reacting against their geographical environment?

Under the stimulus of man's inventive genius, along with the evolution of modern science and inventions, intercommunication has been made perfect, barriers have been broken down, regions once isolated have been connected, continents have been linked, the whole earth has become one vast neighborhood, and every man a neighbor. Here we see the interdependence of men, the East upon the West, the West upon the East, the North upon the South, and Europe upon America. Adverse conditions in one section affect all other sections. Civilized man everywhere is dependent upon all regions of the earth to contribute to his food, shelter, clothing, and culture; and a large part of civilized effort has been directed toward perfecting modes of travel, commerce, and intercommunication, until today streams of trade have opened into world-wide currents."

288. **Types in geography.**—A type in any study is a form of knowledge fixed in the mind. Such a form of knowledge becomes an apperceiving group for all other related knowledge. Thus in the study of geography it is possible to have the child master a characteristic mining section, or an agricultural section, or a manufacturing section. Then when he comes to study other portions of the globe situated within the same general boundaries, his first inference will be that the conditions in those respective mining, agricultural, and manufacturing sections are similar to the ones already studied. The analogy must be tested by finding a few conditions that mark a difference between the two sections. The advantages claimed for types as given by McMurry are the following:

1. Types are keys to larger areas of geographical knowledge.
2. Realities are studied.
3. Thoroughly interesting and instructive.
4. The study of causes and causal relations.
5. Basis of a series of comparisons.
6. From home outwards.
7. Direct path to whole groups and sequences.

289. Illustration of a type.—In 4A the pupils make a thorough study of New York City. Note how this kind of treatment could be applied to Boston, Chicago, San Francisco, or any other city.

HOME GEOGRAPHY.—A plan of the schoolroom as an introduction of the study of maps; sketch-plan of the school block, showing the position of the school building and the location of the classroom; the directions, north, south, east, and west indicated; plans drawn without reference to scale. Topography of The City of New York and vicinity; location of city with reference to the states of New York and New Jersey; division of city into boroughs and names of boroughs; direction of each borough from home borough; boundaries of the home borough and of Manhattan; land and water forms of the neighborhood; the harbor and water fronts. Location of main avenues and streets of home borough; names and locations of local bridges, tunnels, parks and other important points of interest, with their attractions and the means of reaching them.

POPULATION.—Brief reference to nationalities composing it; occupations of the people illustrated by reference to neighboring farms, factories, shops, and to street and river traffic; transportation of people from the home borough to the business sections.

LOCAL HISTORY.—Stories connected with the history of New York told or read by the teacher or by the class; stories illustrated by reference to places and monuments of historic interest; biographical stories illustrating some of the great historic periods, as the settlement of Manhattan and neighboring territory; Dutch occupation; the coming of the English; struggles with the French and with the Indians; New York during the Revolution. Development of the city as a manufacturing and commercial center, e. g., Fulton's steamboat; the opening of the Erie Canal; the introduction of the telegraph; the laying of the Atlantic cable; the Brooklyn Bridge; consolidation; the Greater New York; the opening of the subway.

Stories of distinguished citizens of The City of New York, such as Peter Stuyvesant, DeWitt Clinton, and Peter Cooper.

GOOD CITIZENSHIP.—Fire department. Fire alarms; engine houses; duties of firemen; instances of heroism.

Duty of Citizens. Care in the use of matches, kerosene, gas, benzine and other explosives or combustibles ; care in regard to fireworks, bonfires, and rubbish; duty of keeping fire-escapes clear of encumbrances; fire-drills; means of egress from buildings; behavior at panics.

Police Department. Enforcement of law; maintenance of order; control of crowds; protection of life and property; detection and prevention of crime; arrest of criminals; traffic regulation; instances of heroism.

Duty of Citizens. Respect for police authority; appeal in case of danger; rendering assistance in maintaining order; conduct in the streets; ball-playing and stone-throwing—why forbidden; protection of city property.—From Syllabus, Revised Course of Study, 1905.

290. Comparison.—The study of geography by means of causal series, topics, etc., requires the constant use of comparison and contrast. But even aside from these specific methods involving the causes, many modern geographies present comparative tables for visualization. Some use dark lines of varying lengths to indicate the quantity of products. Others approach nearer the objective reality by presenting bags of different sizes to indicate the quantity of grains produced; barrels are used for wines, liquors, and other liquids. These tables, whatever they may be, are simply another way of impressing geographical facts through multiple sense instruction. The memory alone is not required to carry the the lessons of comparison.

A comparison of North America and South America is taken from DeGraff's School Room Guide, p. 286.

1. North America is an irregular triangle.	1. South America is a regular triangle.
2. On its west coast, there is a high range of volcanic mountains.	2. On its west coast, there is a high range which contains many volcanoes.
3. Parallel with the east coast, runs a lower range.	3. Parallel with the east coast, runs a secondary range.
4. The middle of the continent is occupied by a vast plain from the Arctic Ocean to the Gulf of Mexico.	4. The middle of the continent is occupied by a vast plain from the Carribbean Sea to the La Plata.
5. The St. Lawrence flows from west to east; the Mississippi from north to south.	5. The Amazon flows from west to east; the LaPlata from north to south.

291. Plan of study.—Recommended by the Board of Superintendents, 1907. Quoted in 291 to 297.

In studying the continents as wholes, attention should be directed to their comparative sizes, (North America being taken as the unit), relative positions, their general contour, their great mountain systems, their great rivers, their large seas, gulfs, and bays, and their important neighboring islands. Then should follow the main political divisions and the positions of important cities.

292. Plan for studying a country.—In studying a country the following series of topics, as far as they may be applicable to the country under consideration and in the grade in which the lesson may be given, is suggested:

1. Location as determined by latitude and longitude and with relation to surrounding countries and waters.

   Pupils should never be told the latitude and the longitude nor required to memorize them, but should be trained to determine them by the inspection of a map.

2. Comparative size and shape.

   The area of the State of New York (about 50,000 square miles) may be taken as the unit with

which the areas of all countries shall be compared. The comparative size should never be told, but should be made a matter of calculation on the part of the pupil.

3. Mountain systems and important ranges; slopes and plains.
4. River systems and important rivers.
5. Important cities, their location, and their comparative population.

   The population of the City of New York, four millions in round numbers, may be taken as the unit of comparison. When learning about a city, the reason for which it is celebrated should be brought out.
6. Climate, industries, products, and areas of production.
7. Form of government and general condition of the people as to education and ways of living.

   Under the head of "Ways of Living" should be included housing, food, clothing, occupations, and use of animals.
8. Exports and imports, trade, particularly with the United States.

293. The recitation.—Most of the work in geography should be done in the classroom. Very little, if any, study at home is necessary. The lesson should generally begin with a study of a globe or a map. This should be followed or accompanied by the reading pertinent selections from the text-book or supplementary reader. The selections should be read aloud in class, and pupils should be expected to answer questions after a single reading. Then some time should be spent in copying the map roughly from the book or from the wall, indicating such phases of the subject as have been studied. The next lesson should consist largely in questioning the pupils with the map before them and in requiring them to make

rapid sketches of maps from memory. This exercise is the best method of fixing geographical knowledge and of showing the pupil how accurate or inaccurate his knowledge is. It is, moreover, the easiest way to teach much of this subject, as well as the easiest way to test the definiteness with which the subject has been learned. Care should be taken to see that these maps are only sketches and that time is not wasted on the unnecessary elaboration of details. Neither tracing nor construction lines should be used. Sand or clay modeling may be used in the early grades to give a conception of the surface of a continent or a country.

294. **Use of pictures.**—A valuable aid to instruction in geography is a picture. The only true conceptions of certain elements of geographical knowledge are obtained by travel and observation. But travel and observation for children are restricted within very narrow limits, and the best substitute is the picture. One picture is often worth volumes of verbal description, and at the present time there is scarcely any place or any feature of life or human activity of which a picture is not easily obtainable. Pictures are useful, however, only when children are trained not only to see and name the objects they contain, but to draw conclusions from them regarding the character of vegetation, the habitat and habits of animals, the ways of living and occupations of men, and other topics involved in the teaching of geography.

295. **Outlines by pupils.**—In the higher grades, pupils should be exercised in making synoptic outlines of topics treated in the text-book.

296. **Aids.**—GLOBE; outline, commercial, United States geographical survey, topographic and census maps; weather charts, pictures, photographs, lantern slides and other illustrative material; collections of minerals, rocks, soils, seeds, raw and manufactured material; text-books, books of reference on geography, history, biography, travel, natural history;

magazine articles, newspaper clippings, almanacs of the New York dailies, railroad and steamboat guides, and official reports.

297. **Dr. Maxwell on geography.**—In September, 1907, Dr. Maxwell delivered an address before the principals of New York City. Sections 298 to 299 inclusive give the substance of his remarks on the revised syllabus in geography. See School Work, November, 1907, for an excellent abstract of the whole address.

298. **Suggestions to principals.**

1. That you read and discuss with your teachers the Introductory Note, which explains the organizing principle of the course and make suggestions as to method.
2. That you should take up lessons with your teachers as they will be expected to take them up with their pupils. These things require special attention to the following details:
   (a) How to use a globe. See section 301.
   (b) How to use a map. See section 317.
   (c) How to study the text of the geography. See section 318.
   (d) How to study a picture. Following plan suggested: Select a picture, see the items it contains, draw conclusions as to character of vegetation, occupations of men, ways of living, etc.

299. **Results that are essential.**

1. In learning about a place, a pupil should be able instantly to point to it on (a) a map with names, (b) map without names, (c) place it on a map rapidly sketched by children.
2. Tell why it is distinguished.
3. To make rapid computations as to relative size; continents with North America; countries with New York State; cities with New York.

4. To tell the latitude and longitude of a place from inspection of a map; and to locate a place, the latitude and longitude being given.
5. To make a synoptic outline of a given portion of the text. To meet criticism, I would suggest that both teachers and children should be required when mentioning any city in the United States to mention along with it the State in which it is located.

300. Suggested ideas and devices.—Some of these have already been mentioned, but we present them all under this heading so that the teacher may view the topics as a whole.

1. Moulding-board, globe, maps.
2. Outline maps. The time required for elaborate work in making the outlines of various states or countries is no longer considered useful in the study of geography. Outline maps may be secured from publishers and then the filling in becomes a valuable act of learning. Only the most important points deserve location on the maps. The use of such map-making is simply one means of impressing through visualization and motor activity.
3. Product maps to illustrate resources. Concrete interest is attached to this kind of work as long as pupils are encouraged to place actual resources such as grains, minerals, kinds of trees, etc., on the map.
4. Have a bulletin or scrap-book for interesting articles brought by the children. The latter is recommended for permanent use. The teacher may find it necessary to reject some of the material selected by the children, but after a little experience the children will themselves be able to select what is worth pre-

serving. Such a book becomes a permanent source of interest and information for succeeding classes.

5. Have pupils prepare suitable review questions at home. The abuse of this practice seems to be the only valid objection to this kind of constructive work. All the general acts in the school are tending toward habituation of a desired kind and so there seems to be no good reason why pupils should be denied the right to take an active part in making the questions for review or for examination. The teacher's supervision is needed at all times, but that is no reason for rejecting all the work of this kind. A thorough justification may be found in a little actual experience.
6. Assign topics for discussion by individuals. Limit the number so that the whole recitation need not be given to this kind of training. A few topics intelligently discussed will give variety to the exercise and also stimulate a wholesome interest in this kind of original research. Do not permit pupils to hold notes while speaking; encourage them to remember as much as they can. Have the pupil who is speaking face the class.
7. Have debates in grammar grades. These debates serve as a valuable kind of review. The pupils are required to select the essential facts, to weigh them in comparison with other facts, and then to use their reasoning powers in defending what they hold to be the facts of most importance. The following subjects for debate are suggested: Germany vs. United States; limited Monarchy vs. Republic; Eastern United States vs. Western United States,

taking Mississippi River as a dividing line; Railroads vs. Steamships in the Development of Commercial Prosperity.

8. Commercial trips. These trips are journeys from one port to another. Their purpose is general review. Pupils must name the ports, the steamships lines connecting, the cargo, the cities passed, the status of respective nations, the favorable or unfavorable climatic conditions, ocean currents, return cargo, etc. Encourage pupils to sketch outline map to indicate the journeys made.
9. Geographical cards. Many excellent series of geographical cards are issued by the various publishing houses. Some of these cards are intended only for review, while others furnish interesting information of literary, historic and scientific value. For personal use, teachers can make such cards covering the specific work of their own grade.
10. Competition. The kind of interest sustained by spelling matches and other competitive drills can likewise be applied in review in geography. An interesting application of this kind of drill is the assigning of each child to one country in Europe, for example, and then asking him to be ready to present a complete defense of all the advantages of his country. The blackboard may be divided into sections so that each child may write a list of the important points in his defense.

301. The globe and its uses.—Every class in geography should have a globe. Better yet if every pupil can have one during certain recitation periods and study periods. No child can learn all his geography by personal study of the earth it-

self, and so a globe should be made the most useful objective aid in all stages of the work in geography. Expensive globes are not necessary; in fact, complex and elaborate representations are confusing. A large globe can be made of clay, paper, or wood. Then paint the surface black and observe the advantage and delight in using crayon to illustrate the point of the early lessons in geography.

The latest requirements in the course in geography require frequent use of the globe. Some of such uses in teaching are suggested here.

1. Shape of the earth. The earth is an oblate spheriod. Then show the flattened surface at the poles. To carry the suggestion further, illustrate the flattening process by whirling a ball of moist dough on a wire or rod as axis.
2. Axis, poles, equator.
3. Rotation of earth. This will give foundation for later teaching of causes of day and night.
4. Revolution of earth. This will lead to causes of change of seasons.
5. Inclination of axis, zones, ecliptic, latitude, longitude, meridians and parallels.
6. Distribution of land and water. Draw line around globe and observe which hemisphere has the more land.
7. Relative position of continents, countries, oceans, seas, etc.
8. Relief globe for illustrating surface.
9. Commercial routes to show the world's highways of commerce.
10. Use the globe in every development lesson to remedy defective ideas arising from studying a flat map.

302. The shape of the earth.—It is a difficult matter for pupils to understand all the facts used to prove that the earth is a sphere, but this difficulty is not a valid reason for dropping that

work altogether. Pupils can understand some of the proofs; later in school life more proofs will seem clear; and during all the geography work, the pupils will be making useful inferences because they have faith in the conclusion. This topic is a valuable one because it invites thought all through life.

I. Aim. To prove that the earth is a sphere.

II. Preparation. The very announcement of the aim arouses curiosity. Additional interest may be awakened by having a cube, a cardboard disc, a wire hoop, a large globe, and a small globe for each pupil.

III. Presentation. The proofs involve personal experience and derived information.

1. Horizon is always a circle.

   This proof is a matter of observation. It is true for all locations. Use wire hoop to illustrate. Take any point within hoop, keep hoop in the plane of vision, and the limiting line of vision is always circular.

2. When ships are approaching, masts are seen first, then the lower part of the masts, and finally the whole ship.

   This is likewise a matter of actual observation. Illustrate by moving objects on the globe.

3. New stars come into sight as we reach new latitude.

   This is information from the experience of others. Show that this change in the sky may be due to the curved surface of the earth. Use pointer held against object moved on globe and observe arc described by end of pointer.

   N. B. These three proofs simply indicate that the earth has a curved surface.

4. The earth has been circumnavigated.

   This is a fact in history. Recall Magellan's

voyage from Spain across the Atlantic, through the Straits of Magellan, over the Pacific to India, around the Cape of Good Hope and thence back to Spain. That voyage in 1519 and 1520 was the first complete circuit of the globe. Show commercial routes around the world. Show by cardboard disc that the circumference is a way leading back to any starting point; but a passage over the edge of the plane surface of the card would not lead back. Recall fear of sailors on first voyage of Columbus. They thought they would drop off the flat surface west of Spain and never be able to return.

5. Earth's shadow on the moon in an eclipse is always a circle or part of a circle. None but a spherical body can cast a circular shadow in any position.

   Illustrate this by holding cube in the sun. Likewise with disc, pencil, pointer, book, etc. Observe shadow of pupil. The shape of the shadow is like the shape of the body casting the shadow. Briefly explain eclipse and show pictures of eclipses.

6. Analogy. All the other planets are seen to be spherical, and it is not probable that the earth is an exception.

   This fact about other planets is verified by astronomers. Use of powerful telescopes is an interesting topic.

   N. B. These proofs show that the earth is a sphere. The following proofs are intended to demonstrate the flattening at the poles; in other words, the earth is an oblate spheroid. Proofs 8, 9, 10 should not be given in elementary work in geography.

7. It is a law of all rotating bodies that they rotate upon their shortest diameter. If a spherical body in a fluid state be rotated, its axis of rotation will become its shortest diameter.
8. By actual measurement of the arcs of meridians, it is found that a degree increases in length towards the poles. This shows that the arcs near the poles are arcs of larger circles.
9. A pendulum vibrates more rapidly near the poles than at the equator. This is due to greater force of gravity.
10. Bodies increase in weight when moved from the equator to the polar regions. This is partly due to gravity as in 9.

IV. Conclusion. The earth is an oblate spheroid. Its polar diameter is 26.48 miles shorter than its equatorial diameter.

303. Climate.—The comprehensive use of the word climate requires a study of temperature, moisture, and all the modifying conditions of each. Temperature embraces the variations of heat and cold; weather relates to daily temperature; climate means an average of weather conditions during an extended period. Moisture is water in any of its forms.

The conditions affecting climate can seldom be considered alone; they modify one another. Younger pupils cannot understand all of the facts at first, but later study will utilize what is understood in the early lessons. These modifying conditions are often studied in relation to causes and effects.

1. Latitude. Climate becomes colder as distance increases north or south from the equator. The region of the equator receives the vertical rays of the sun; the regions north or south receive heat from oblique rays; the polar regions are deprived of heat and light for certain periods. This difference in vertical and ob-

lique rays of the sun is due to the inclination of the earth's axis. The earth's radiation of the heat received is the fundamental condition to be considered here.

2. Altitude. The general rule is that cold increases with altitude. Three hundred feet make a difference of one degree. Rapid radiation of heat is the principal cause.
3. Proximity to the sea. Effect is toward uniform climate; cooler in summer, warmer in winter. The sea absorbs heat and radiates heat more slowly than the land. Hence, cool breezes from the sea in summer, warm breezes in winter.
4. Prevailing winds. Climate is modified by heat, cold and moisture distributed by winds. Sea breezes carry much moisture; land breezes are dry winds.
5. Position and direction of highlands. Highlands modify climate by shutting off hot or cold winds; by condensing moisture till it falls as rain; and by intercepting moisture-bearing winds.
6. Slope of country. Note how slope may favor climate under each of the five conditions already mentioned.
7. Nature of the surface. Forests equalize temperature and prevent droughts and floods. Deserts and sandy soils radiate heat rapidly; clay soils retain heat and moisture. Large areas of cultivated land absorb and radiate heat more rapidly than grazing lands. Bogs, marshes and other lowlands tend to cool the air and cause fogs. Rocky surfaces heat and cool quickly.
8. Ocean currents. See Gulf Stream, Japan Current.

ILLUSTRATIONS.

1. Western Alaska. Inference from latitude and altitude, cold; but proximity to sea, warm winds and westerly slope favor mildness of climate.
2. Newfoundland same latitude as Ireland. Newfoundland cold by latitude, by Arctic current, by prevailing winds; Ireland has warm climate on account of Gulf Stream, winds, nature of surface.
3. The great deserts of Utah and Nevada are caused by the position and direction of the Sierras; moisture shut off and precipitated.

304. Forms of moisture.—Since moisture has so much to do with climate, it is necessary to consider the forms of moisture, their causes, and a particular explanation of rain.

1. Water vapor is a name given to moisture in an invisible form. Water which passes into the air by evaporation may be said to exist as water vapor.
2. Dew is one form of condensed vapor. If air containing water vapor be cooled, the vapor will approach saturation, since the lower the temperature, the less the capacity for water vapor. On clear, calm nights the soil and vegetation radiate heat; the surrounding air becomes cooler; hence, vapor is condensed into small drops of water. The temperature at which condensation occurs is the dew-point.
3. Frost is frozen dew. Frost is formed when the dew-point is below 32 degrees Farenheit.
4. Fog. A visible mass of vapor on or near the ground is fog. Condensation is caused by the meeting of warm air and cool air. Thus the Newfoundland fog is caused by the warm air

from the Gulf Stream meeting the cool air from the Arctic Current.

5. Clouds are visible masses of vapor floating in the air.
6. Mist is vapor falling in very small drops.
7. Rain is condensed moisture which falls when it becomes heavier than the atmosphere.
8. Hail is frozen rain.
9. Snow is frozen vapor.
10. Glaciers are rivers of ice.
11. Icebergs are portions of glaciers broken off and floating in the ocean.

305. Rain.—The four processes requiring explanation are evaporation, condensation, saturation, precipitation.

I. Evaporation. Familiar facts from observation.

1. Steam is condensed vapor coming from heated water.
2. Heat from the sun or from other sources turns liquids into water vapor, and then the water vapor rises in the air.
3. Water evaporates from clothes hung on a line.
4. Ink evaporates from wells.
5. Hands become chapped in spring because winds cause rapid evaporation.
6. Some ponds and brooks dry up in the summer.
7. Place dish of water in the sun and notice the effect.
8. Roads, sidewalks and porches dry rapidly after a rain. Sun and wind hasten evaporation.
9. During hot afternoons in summer, the sun can be seen "drawing water"; i. e., actual evaporation can be observed.
10. Definition. The process of moisture passing into water vapor, under the action of heat, is evaporation.

II. Condensation.

1. Steam is not strictly water vapor since steam is visible. Water vapor, partially condensed by contact with cool air, is steam; and further condensation into water can be produced by having the steam come into contact with cold glass, slate or other surface.
2. Moisture from the breath condenses on cool window panes.
3. Moisture condenses on the outside of a pitcher of water.
4. When pupils say they see their breath on a cold day, they see only the condensation of the moisture in their breath.
5. Definition. The process of water vapor or other forms of moisture passing into water, under the action of cold, is condensation.

III. Saturation. Condensation of moisture in the atmosphere is caused by the cool surfaces of forests, hills, mountains, or by cool currents of air. Saturation denotes simply the extent of condensation; it is all the moisture that the atmosphere can hold.

IV. Precipitation. When saturation causes the moisture to become heavier than the air, the moisture falls as rain. This condition is called precipitation.

SUMMARY FOR APPLICATION.

1. Heat of sun converts water into water vapor. The greater the heat, the greater the evaporation.
2. Hot air can hold more water vapor than cold air.
3. When hot air containing water vapor becomes cooler the vapor condenses into clouds.

4. The clouds become saturated by the uniting of the particles of water, and then rain falls as soon as the weight is more than the air can sustain.
5. Rainfall is constant in a belt about five degrees wide near equator; periodic, north and south of the constant belt; variable, beyond the limits of the periodic belts.
6. Rains purify the air, modify climate, clean the surface of the earth, and help sustain all animal and vegetable life.
7. Notice the circulation of water: Rains supply springs, brooks, rivers, and all other sources of moisture; springs, brooks and rivers unite to supply larger bodies of water; evaporation furnishes moisture in the form of water vapor for the air; water vapor condenses into clouds, particles unite and fall as rain. Think how this circulation is a natural way of sustaining the conditions required for agriculture, manufactures, commerce, and the leisure joys of life.

306. Glaciers.—This lesson need not be difficult if teachers will distinguish known and unknown.

I. Preparation. Recall hill, mountain, snow-capped summit of mountains; the melting, moving and falling of snow on roofs, hills and known mountains; successive thawing, snowing and freezing on skating ponds; the familiar processes of wetting and packing snow in making houses, forts, snow-men.

II. Presentation. Most of the facts are familiar. Larger applications are required.

1. Formation. Heavy snowfall on mountains during long winters. Summers too short to melt all the snow. Year after year snowing, thaw-

ing, melting, packing and freezing continue. Thus the immense mass of snow and ice is formed into a glacier.

2. Movement. The slope of the mountain, the thawing and the weight of the glacier will tend to cause a movement. Amount, one foot or more in a day. The top of the glacier moves faster than the bottom, the center faster than the sides. Why? Tall, narrow glaciers move more rapidly than broad ones. Why?

3. Action of the glaciers. Huge rocks are torn away by the sides and bottom of the glaciers. Some of these rocks are crushed and distributed as soil, while others, badly scratched, are left in the pathway of the glacier. Such rocks are found on Long Island and in many parts of New England and New York.

4. Norway, Sweden, Switzerland and Alaska are the homes of glaciers. The western coast of Norway is a series of beautiful fiords caused by glacial action.

III. Drill. Whether named as application or continued presentation, this lesson is made more vivid by the following.

1. Pictures of glaciers.
2. Pictures of fiords.
3. Stereopticon views.
4. Magazine articles on life in the Alps.
5. Blackboard drawings. This subject is adapted to crayon illustration.
6. Geography readers and other correlated material.
7. Allied topics for collateral reading or for future lessons: Crevasses and Moraines; the Ice Age in North America; Icebergs.

307. Icebergs.—See lesson on glaciers. Icebergs are parts of glaciers. When the forward part of a glacier moves into the ocean, the force of the water lifts up the submerged part and breaks it off. This detached mass of ice then floats away as an iceberg. Ice is only a little lighter than water, and so only one-eighth of the iceberg remains above the surface of the water. The course of icebergs is directed by winds and ocean currents. Icebergs cool the temperature, cause fogs, and endanger navigation.

308. The seasons.—Pupils living in the temperate zones are familiar with spring, summer, autumn and winter, but many pupils never fully understand summer and winter in the frigid zones and wet and dry seasons in the torrid zones. A season seems to stand for fixed temperature within definite zone boundaries. But as climate is the result of many modified causes, so the seasons yield to local conditions as we pass from zone to zone.

FACTS.

1. The sun illumines but half the earth at once.
2. The earth revolves around the sun once in 365 days.
3. The earth's axis is inclined 23½° to the plane of its orbit.
4. The earth's axis always points in the same direction. The north pole points toward the north star.
5. Temperature depends upon direction, duration and distance of the sun's rays.

INFERENCE.

Different parts of the earth's surface will receive different degrees of heat during the year. These differences may be stated in describing each of the seasons. See geography for drawings.

1. Spring. On the 20th of March the sun's rays are vertical at the equator; the circle of illumination intersects the poles; days and nights are equal everywhere, and heat is increasing in the northern hemisphere. This is the vernal equinox and the season is called spring.

2. Summer. On the 21st of June the sun's rays are vertical at the Tropic of Cancer; the circle of illumination extends 23½° beyond the north pole and falls short 23½° of the south pole; days and nights are longest in the northern hemisphere and shortest in the southern; heat is greatest in the northern hemisphere. This is the summer solstice and the season is summer.

3. Autumn. On the 22nd of September the sun's rays are again vertical at the equator; the circle of illumination intersects the poles; days and nights are equal as on March 20; heat is decreasing in the northern hemisphere and increasing in the southern hemisphere. This is the autumnal equinox and the season is autumn.

4. Winter. On the 21st of December the sun's rays are vertical at the Tropic of Capricorn; the circle of illumination extends 23½° beyond the south pole and falls short 23½° of the north pole; days are longest in the southern hemisphere and shortest in the northern; heat is greatest in southern hemisphere. This is the winter solstice and the season is winter.

309. **Zones.**—Divisions of the earth's surface corresponding to the amount of heat received and to the varying length of days and nights are zones.

The lesson on the seasons gives the essential facts used in this lesson. This is simply a classification of those facts.

1. Torrid Zone lies between Tropics of Cancer and Capricorn. 47 degrees or 3250 miles wide. Torrid means hot; this zone is the hottest portion of the earth. Days and nights nearly equal. Two seasons, wet and dry.
2. North Temperate Zone lies between Tropic of Cancer and the Arctic Circle. 43 degrees or 3000 miles wide. Days and nights vary in length. Temperature varies; four seasons.
3. North Frigid Zone is north of the Arctic Circle. Width from Arctic Circle to north pole 23½ degrees or 1625 miles; modern texts speak of the widths as 47 degrees. Oblique rays of the sun part of the year. Days vary in length from 24 hours to 6 months. Two seasons, summer and winter.
4. South Temperate Zone is bounded by Tropic of Capricorn and Antarctic Circle. 43 degrees wide. Four seasons opposite in time to North Temperate Zone.
5. South Frigid Zone. Size similar to North Frigid. Days and seasons opposite to North Frigid.

310. Isotherms.—Isotherms or isothermal lines are lines drawn upon a map or globe connecting all places having the same average temperature. Thus the isotherm of 50° Farenheit passes through New York at 40° latitude and London at 50° latitude, making a dip of 10 degrees in latitude. The true climatic zones do not correspond to the astronomical zones already discussed. The Torrid Zone is bounded by 70° F.; the Temperate, by 70° F. and 32° F.; the Frigid is below 32° F.

It is interesting to have the class follow a few isotherms around the earth and ascertain the causes for variation in latitude. Such an exercise will apply the facts under causes of climate.

311. **Latitude and longitude.**

I. Aim. To understand latitude and longitude as means of locating places on the earth.

II. Preparation. Conversational exercise about familiar ways of locating things. Numbers for rooms, coat hooks, houses; aisles and rows of seats in the schoolroom; avenues and streets in the city. Show plan of regular section of a city where streets and avenues are at right angles. None of these ways adapted to earth as a whole; hence, necessity for another way.

III. Presentation. Have circular disk, blank globe, maps and mapped globe. Draw axis and equator on circular disc and blank globe. These give starting points for measuring.

1. The name of the equator is known. Measure north and south in inches. Show impractical use of such standards as inch, rod or mile. Tell that the degree is the unit and that every circle contains 360 degrees. This number was chosen because it is divisible by all numbers from 1 to 12 except 7 and 11. These facts must be accepted; they do not admit development.

2. For latitude, tell that the equator is starting point for measurement north or south. Hence, places on the equator have no latitude; they are marked 0°. Now draw a circle passing through the poles; elicit that the north pole is a terminus in measuring north latitude, that the south pole is a terminus for south latitude; that the distance from the equator to either pole is one-fourth of the whole circle, or 90 degrees; that the limits of latitude are 0° and 90°.

3. Parallels. Lines can be drawn parallel to the equator for convenience in indicating latitude. Call such lines parallels. Why?
4. Definition. The distance in degrees north or south of the equator is latitude.
5. For longitude, another starting point evidently required. Tell pupils that the meridian passing through Greenwich, England, is the Prime Meridian. Prime means first; meridian means midday because all places on it have midday at the same time.
6. Draw Prime Meridian on black globe or indicate it on mapped globe. Two kinds of longitude, east and west. Have two pupils move objects from Prime Meridian east and west around the equator and thus observe that the maximum east or west longitude is one-half way around the earth, or 180 degrees.
7. Meridians. Lines are necessary for indicating longitude; hence, the meridians.
8. Varying length of degrees of longitude. Observe meridians on globe and maps; mark meridians and cut sections from apple, watermelon or other spherical forms. Make pupils see that greatest length of a degree of longitude is on the equator; at the poles, 0°.
9. Definition. Distance in degrees east or west from the Prime Meridian is longitude.

IV. Applications.

1. Practice in reading latitude and longitude at top and bottom of maps. Here explain that meridian of Washington is also used.
2. Find actual latitude and longitude of specified cities and countries.
3. Give latitude and longitude of certain places and have pupils find places.

4. Location of ships at sea. All ships have chronometers showing accurate time at Greenwich. For instance, suppose the sun indicates 10 A. M. when the chronometer indicates 3 P. M. Since any spot on the earth's surface passes through 360 degrees in 24 hours, each hour is equivalent to 15 degrees. The difference in time between chronometer and sun is 5 hours, or the equivalent of 75 degrees. Hence, the ship is in 75° west longitude. The longitude is west because the time by the sun is earlier than the time by the chronometer. Reverse the facts and the longitude would be 75° east.

312. **International Date Line.**—If a man starts westward from London to travel around the world, he must set his watch back one hour for every 15 degrees passed over if he wishes to have the correct local time. This would require twenty-four changes during the journey around the world, and thus he will lose twenty-four hours or a whole day.

If he started eastward from London, he would set his watch ahead twenty-four times, and thus he would gain a day.

To overcome such differences, the nations have agreed upon a place where time shall be changed. That place is the 180th meridian east and west from Greenwich. Suppose the two men start from Greenwich near London, one going eastward and the other westward. The one traveling eastward will find the time twelve hours later than when he started while the one traveling westward will find the time twelve hours earlier. So the latter in crossing the line on Wednesday must call the day Thursday; while the one traveling eastward in crossing the line on Wednesday must call the day Tuesday.

313. **Standard Time.**—The railroads of the United States have agreed upon scheduled places for changing time. Following are the divisions:

75th meridian. Eastern Time.
90th meridian. Central Time.

105th meridian. Mountain Time.
120th meridian. Pacific Time.

It is evident that the difference in time between any two of these divisions is one hour.

314. Volcanoes. Concrete presentation.—One device for giving pupils a concept of volcanoes is to observe coke, ashes and iron slag, which are known products resulting from the action of heat; to explain the formation of the earth by the process of cooling of the surface while the interior still remained hot; to make drawings to illustrate earth's crust, heated interior and cracks in earth's crust; to show picture of active volcano; and to read or give vivid description of the action and results. This plan gives the general idea of a volcano without much emphasis upon details.

Another presentation.—This plan involves a scientific treatment of the topic. In matter and method it is suited to older pupils. Heat of the interior of the earth is explained and proved as follows:

1. Hot springs are evidence of interior heat. Some found as far north as Iceland.
2. Geysers are another indication of interior heat.
3. Increasing heat in mines. Heat increases about one degree with every sixty feet of descent into the earth.
4. The nebular hypothesis regarding the formation of the planets explains the existence of the heated interior and the cooling crust. In the process of cooling the contraction causes many fissures, foldings and openings in the crust or surface of the planet.

Action of volcanoes. Water from the surface of the earth passes through the openings into the heated interior; the heat expands the water into steam, and this added power causes an explosion or eruption. The matter thrown out during an eruption is lava, or melted rock, pumice stone, water, steam,

sand, mud, cinders, and ashes. The opening through which the materials are forced is the crater of the volcano.

Noted volcanoes. Mauna Loa and Kilauea in Hawaii, Chimborazo in South America, Hekla in Iceland, Etna in Sicily, and Vesuvius near Naples in Italy.

Graphic aids.

1. Pictures of extinct, dormant and active volcanoes.
2. Drawings of vertical section showing base, cone, crater; the process of mountain building around crater; the contour of the volcanic mountain and the distribution of ejected materials.
3. Maps showing location of principal volcanoes.
4. Specimens of pumice stone, lava, ashes, etc.
5. Narration, description and illustration of the destruction of Pompeii.
6. Stereopticon views.

Definitions. A volcano is a mountain or hill, usually more or less conical in form, from which lava, cinders, steam, sulphur gases, and the like are ejected;—often popularly called a burning mountain.—Webster.

This definition is scientifically inaccurate. A volcano is not necessarily a mountain; the mountain is the result of the accumulation of material ejected by volcanic action. Again, a volcano is not a burning mountain; the explosion is not a process of consuming material by burning.

A volcano is a hole in the earth's crust from which steam, lava, or ashes are or have been thrown.—Dexter and Garlick's Object Lessons in Geography, p. 155.

A volcano is essentially a vent in the surface, through which rises some kind of molten rock, which, upon accumulating, builds a conical peak.—Tarr's Elementary Geology, p. 329.

Illustration of eruption of Vesuvius. Apparatus. Large glass vessel, small bottle of red wine, clay or sand, water. Form miniature mountain on bottom of vessel; make small hole in cork of wine bottle and then cover bottle with sand; put

water in vessel. When ready, stir the water. The water removes sand from hole in cork and the wine ascends in a whirling plume.—McKay's Magic Experiments, p. 30.

315. Winds.

I. Circulation of the atmosphere. The air is very elastic and so it is easily put into motion by changes in temperature. Heat causes air to expand, become lighter, and rise. This upward current of warm air is replaced by heavier cool air which in turn rises after becoming heated. Apply this explanation to the large areas in the equatorial regions and notice four great movements in the general circulation of the atmosphere:

1. The inflowing surface winds.
2. The uprising heated current.
3. The outflowing winds at high elevations.
4. The descending air at considerable distance north and south of the equator.

II. Relation of air pressure and wind. The rising column of warm air pushes away the air above it, thus decreasing the barometric pressure; but the reverse is true in regard to pressure when the cooling air becomes heavier by condensation. Then it follows from the last topic that wind and air pressure are closely related.

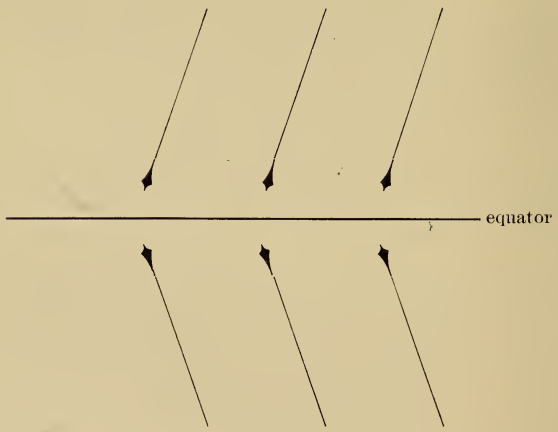
316. Trade winds.

I. The name. The name trade winds is given because commercial vessels take advantage of the aid given by these winds.

II. Location. In Atlantic Ocean 8° to 29° N. and 3° N. to 28° S. In Pacific Ocean 2° to 25° N. and 2° to 21° S. latitude. It is sufficient to say about 30° north and south of the equator.

Cause. Cooler air rushing in to replace rising air in equatorial regions. See explanation in circulation of atmosphere.

III. Direction. From the northeast in the northern hemisphere; from southeast in the southern hemisphere. Such incoming air tends to blow from north and south; but the earth's surface at the equator is moving eastward at the rate of seventeen miles a minute, and so the wind lags behind.



IV. Effects.

1. Aid navigation. Columbus followed this route.
2. Coming from cold regions, they absorb moisture and thus cause deserts.
3. Absorbing much moisture from the ocean, they produce abundant rainfall on sloping coasts.
4. The meeting of so much warm air at the equator produces an upward movement over an area

nearly 400 geographical miles wide. This area is the belt of equatorial calms.

317. **How to study a map.**—This topic is deemed worthy of special discussion in the last revision of the syllabus in geography. It should be so. But just lay aside theoretical disputations for a while, join a 7B class, and study Asia with them. Here are the real conditions :

1. Geography is disliked by some pupils because it has not been well taught. The pupils have not been taught how to use the text-book.
2. Every pupil has a geography. The ownership of the book or the right to use the book is a native impulse waiting for invitation to react, according to James and Thorndike. The handling of the book gives employment to the hands,—another suggestion of freedom from mischief. The coloring of the map appeals to the eye. In brief, such presence of material means a kind of business that appeals to a healthy class.
3. The teacher works with the pupils. There is a natural interest in such mutual observation, interpretation and discovery; and a derived or acquired interest follows for all pupils who experience for the first time the joy of finding how much can be learned without reading even one line of the text.

The process of studying a map. A large globe, a map of Asia, a map of the world, and a relief map of Asia are ready. Light, heat, ventilation and comfortable position are physical requisites. Preliminary questions on globe and maps will secure attention and thereby prepare the minds for united and individual effort. Such questions will determine comparative location, size and shape; location of highlands and lowlands; general direction of mountains and peninsulas. Now turn to

individual maps; eagerness guarantees activity. The map study gives information on these topics.

1. Actual location by latitude and longitude; land and water boundaries.
2. Size. The largest continent; the largest mountains, rivers, seas, bays, countries, peninsulas; and, by inference, the largest population, forests, animals. This inference requires later proof from text.
3. Surface. The location, direction, extent and names of mountains; the three great slopes as indicated by direction of flow of rivers; the names of rivers and the bordering waters; important lakes and seas.
4. Climate. Probable conditions by comparison with North America; application and probable results of each of the causes affecting climate. Here, again, is another invitation to later use of the text to verify inferences.
5. Countries and their chief cities; apparent means of commercial intercourse.
6. Industries, products, and commerce. Map study alone cannot give the accurate knowledge required but it can correlate old knowledge and also make pupils think and justify their thoughts in advance.
7. The people. Prior information is considerable. Note vast extent of lands of the different peoples.

Pupils' results from studying the map.

1. Social pleasure.
2. Self-satisfaction in progress.
3. Prior knowledge recalled, applied, correlated.
4. Desire to study text to verify conclusions.
5. Consciousness of increasing power in studying.

318. **How to study the text.**— There are certain difficulties in teaching the intermediate grades and it is well to consider first the reasons why pupils do have such difficulties in using the text in geography.

1. Poor teaching. It is a safe rule that says pupils should use text-books as soon as books can be used advantageously. But notwithstanding this view, some teachers do not require pupils to use the books furnished. The teachers make notes from the books, write the notes on the board or dictate them, have pupils copy and then memorize. This plan robs the pupil of his right to learn to do by doing; it is a waste of time; it exalts the memory; it develops a habit of absolute dependence upon the teacher.
2. Defective books. Some text-books are badly planned. Pupils have to search in three or four parts of the book to find the required facts. Some books are not well arranged. The matter may be found in one place, but topics are not given; or if topics are given, the order is neither logical nor pedogogical. Other books are not adapted to the capacities of the pupils; scientific style, or undue emphasis of causal relations when the causes are not understood, or the presentation of a confusing amount of details.
3. Inactive pupils. This condition may be largely due to poor teaching and defective books. The pupils do not feel a necessity for such knowledge. In the section on how to study a map, a way of arousing a desire for study of text has been suggested.

The process of studying the text. The six topics followed in the study of the map make a topical series for guidance in studying the text. Whether the arrangement of the text is in

that order or not, the pupils are working under definite aims. The pupils must classify the facts under the topics; the efforts must be systematic; and the mental result should be a tendency toward a habit of thinking. This leads to the suggestions for aiding pupils in studying the text.

1. Pupils must feel the need of the facts in the printed matter.
2. Pupils should have a guide in their study, such as topics, questions, etc.
3. The teacher should work with the pupils to see that they acquire proper habits of application and interpretation. There is too much scattering of energy.
4. Have pupils read a portion of the text, tell explicitly what the author means, and comment upon it or otherwise apply it. It is a very valuable exercise in observation to have pupils read exactly what is printed, give its precise meaning, and then express a personal opinion upon it.
5. Proof. The printed text must disprove or verify the conclusion reached in the study of the map. Here is authority vs. opinion. Judgment and reasoning are required in every complete act in this kind of study. The map might suggest the tundras as an inviting home for man, but the text describes those mossy swamps as suited only to nomadic tribes who manage to live upon fish and fur-bearing animals.
6. Comparison. The study of North America and Europe has habituated pupils to associate climate, occupations and productions according to zones. Such types of knowledge are used in map studies; but the text must furnish the conclusive facts to enable the pupil to ascertain the truth by comparison and contrast.

Tabulated facts in parallel columns give a mode of visualizing truth in the field of world geography. As in proof, here, too, the text must be used for accuracy.

7. Synopsis. Critical study of the printed matter is insisted upon in each of the foregoing suggestions. Another means of mastering the text is analysis by outline. The value of this exercise is fully presented in the chapter on composition.
8. Abstract. Another way of making the thought of another a part of one's self. See chapter on composition.
9. The text is a source of information for individual discussion, class debates, etc. See section 300.

Chapter XIII. History and Civics.

319. New York City suggestions in sections 319 to 327 inclusive.

320. Early work in history.—In the lower elementary grades, topics introductory to history will be found in the fables and myths and in literature and geography lessons. As pupils in the earlier years take an intense interest in events associated with life and endeavor, the subject-matter of the lessons in history should be chiefly biography and the record of events which have visibly shaped or influenced the destinies of man. Only a brief sketch of each topic is expected; no notes should be dictated by the teacher; no home study should be required of pupils in grades below the eighth year. The reading of library books should be encouraged.

321. Geographical background.—The teacher should see that pupils have a proper geographical background for all historical events. Appropriate use should be made of pictures, reference books, and maps to give a fit setting to the narratives, to show the political and physical boundaries, to indicate territorial growth and expansion, and to illustrate the progress and purposes of movements in warfare. The judgment of the pupil should be exercised in tracing the causes as well as the progress and outcome of great historic movements.

322. Current events, anniversaries, excursions.—Attention should be given to current events and to historic anniversaries, as Lincoln's Birthday, Washington's Birthday, Decoration Day, Independence Day, and Thanksgiving. In order to make the subject of history real and vivid pupils should be encouraged to visit the Metropolitan Museum of Art, the American Museum of Natural History, the museum of the Brooklyn Institute, the historical and general libraries.

CIVICS.

323. Members of society.—Pupils should be taught in all grades, as far as they may be made to understand their responsibilities and privileges as members of society, and that as such they owe duties to the school, to the family, to the neighborhood, to the city, the state, and the nation. In this way they may be led to comprehend the principles of government and their individual duties in connection with it. The necessity for obedience to authority should be dwelt upon, as also the moral obligation of working with the various departments of the government and not against them. Wherever possible, the reasons for conduct should be explained. If the child knows the reason for any law, he will obey that law more readily.

324. Topics for discussion in all grades.—In all grades there should be frequent discussion under these headings: Obedience to law; Why laws are made; Who makes the laws? Who enforces the laws? Why are law-breakers punished?

325. Importance of local ordinances.—Principals and teachers are urged to lose no opportunity to impress upon pupils the importance of city ordinances that are specially applicable to local conditions. Pupils should be led to see that even slight departures from the standard of order and good administration become very serious matters when many persons engage in them, and that, therefore, each individual should be careful to avoid acts, such as throwing paper and fruit skins into the streets, which, though trifling in themselves, would, if they became general, tend to impair the cleanliness and health of the city. In teaching the "duties of citizens and public officials," special attention should be directed to the work of the departments that come under the immediate observation of pupils.

326. Government by the people.—In the higher grades of the elementary course pupils should be led to appreciate the force of Bryce's statement that "the greatest problem that free

peoples have to solve is how to enable the citizen at large to conduct or control the executive business of the state." It is very important that all young people should be made to understand that in this country government is not something apart from the people, but that it is established by the people themselves, and that there are orderly ways provided for giving effect to the will of the people.

327. Aim of history and civics.—The educational aim of civics as of history is to give a body of ideas and a trend of action that will assist the child to become an intelligent and a patriotic citizen.

328. The historical sense.—The historical sense is not a sixth "sense," nor a "faculty"; it is simply a feeling that the past can be rightly interpreted only when the student lays aside his own prepossessions, and seeks in the past itself a means of understanding the forces which moved the men of a bygone age, and when he enters sympathetically into the spirit which gave dignity to their institutions.—Bourne, p. 9, The Teaching of History and Civics.

329. Value of the study of history.—While we have not thought it necessary to mention specific values of the studies, since all the studies are deemed worthy of places in the curricula, special mention should be made of the patriotic and the ethical value of history rightly taught. The student acquires a zealous appreciation of the truth; and in balancing the relations of men and events, a high estimate of civic virtue may be attained. Many writers mention interest, imagination and judgment as three of the useful results of the study of history.

330. Text-book method.—Here again we must dissent from the adverse criticism of the use of text-books. The text-book is the source of information for every pupil and no teacher has a right to deprive the pupil of his right to use his own activity in the field of education, nor can any teacher take the place of an accepted text-book in this or any other subject. More adverse criticism of text-books is not needed; some devotion to

the ideal in teaching pupils how to study a text-book is what is needed.

331. The use of illustrations.—The word illustrations in this topic has reference to the pictures or other illustrations in the text-book itself. One essential of any good text-book is that it shall not be overloaded with details. So, too, of the use of pictures. The illustrations are intended simply to strengthen the matter already given in the printed text. The limit to be observed is the truthfulness and the usefulness of the illustrations inserted.

332. Collateral reading.—"The object of collateral reading is twofold: it supplements a text-book, giving the student additional information and describing the same events from new points of view; and it also cultivates the student's interest in history as literature." This is Bourne's opinion as stated on page 158. Gordy advises the use of a short list of good references rather than the reading of many books. He advises that each pupil read one good reference book in addition to the text-book.

333. The use of maps.—The geographical maps are absolutely necessary to fix the location of the principal places studied in history. This is one means of correlating history and geography. One caution to be observed is that the map shall not have too many places located upon it. Confusion must be avoided.

334. Collection of prints and pictures.—In speaking of school decorations we advised the use of a few superior paintings in place of a large number of cheap prints and pictures. The same caution may be applied to history. It is suggested that a large scrap-book be used for keeping the prints and pictures instead of posting them on the walls of the schoolroom.

335. Excursions.—Fortunate is the school that is located within the field of historic experience. Excursions under the plan described for teaching geography cannot fail to produce

satisfactory results in impressing the facts through the aid of concrete interest.

336. Correlation.—Correlation with geography has already been mentioned in section 333. Literature is another study that can contribute a large share of interest and use. Masterpieces in poetry and prose often present the facts of history under the charm of literature. Lincoln's Gettysburg Speech is an apt illustration of the correlation of oratory and history.

"The teaching of history should be intimately connected with the teaching of English: first, by using historical works or extracts for reading in schools; second, by the writing of English compositions on subjects drawn from the historical lessons; third, by committing to memory historical poems and other short pieces; fourth, by reading historical sketches, biographies and novels, outside of class work."—Committee of Ten, p. 164.

337. Reviews.—Our point of view was expressed in a general way in section 79. That view has particular application to history. Good teaching will require a summary at the close of each recitation; the assignment of home study will be largely a matter of review rather than advanced preparation; the making of outlines of the matter covered in the regular text or of the matter in collateral reading is another valuable exercise; and extemporaneous speaking upon assigned topics or brief written summaries during the recitation period will tend to systematize the whole work under some comprehensive plan of presentation.

338. Open text-book recitation.—"An excellent suggestion is that of 'open text-book recitations,' in which with their books before them, pupils are asked questions on cause and effect, on relations with previous lessons, etc.; answers may, if necessary, be written out and corrected in class. Such an exercise trains pupils to take in the thought of a printed page, and to grasp the essential points.

"Such a system tends to encourage the habit of applying what one knows to a new problem. Still more helpful in the same direction are the off-hand discussions and impromptu debates which spring up in an eager class, and which should be encouraged by every good teacher."—Committee of Ten.

339. Topical method.—The supreme value of the topical method is exemplified in the work in history. The principal difficulty is that text books are not always arranged according to this plan. One view of the topical method in history presents a whole lesson under a series of topics arranged in logical or chronological order. These eight or ten topics, for instance, furnish a guide to whatever the pupil is expected to do in that recitation. Another view of the topical method selects one general topic for the subject of the recitation and then there are a few subordinate topics assigned to be covered in the various ways of conducting the recitation. One topic may be set for oral or written review; another may cover the required work in collateral reading; another may be for general discussion to develop the pupil's power of expression and his sense of sound judgment; while another may be the direct preparation for the work of the succeeding days or weeks. Whatever the arrangement of the topics may be, the aim is definite assignment. It is an effort to direct pupils toward what they should try to learn, where they may find information, and how they may make that information a part of their own mental possession.

340. Verbal repetition.—It is not necessary to give much space to reasons why verbal repetition of the matter in the text is not the way to teach history. This kind of recitation is the cause of severe criticism against the teaching of the past; but a little experience with teachers of this decade leads to a commendation of their tact and judgment in matters of this kind.

341. What should be memorized.—"How far should pupils be expected to memorize? 'A few things should be learned by

heart and, when forgotten, learned again, to serve as a firm ground-work upon which to group one's knowledge: without knowing the succession of dynasties, or of sovereigns, or of presidents, or the dates of the great constitutional events, the pupil's stock of information will have no more form than a jelly-fish.' But those few necessary facts ought to be clearly defined as only a framework to assist the memory."—Committee of Ten.

342. **Use of mnemonics.**—Anything so artificial is not approved as a method of teaching; but it is a device that may have some value for some pupils. The following illustration suggests an ingenious and helpful way of remembering the events connected with slavery agitation.

Notice that the first letters of the seven lines spell slavery.

Sixteen hundred nineteen--Introduced 1619.

Law prohibiting slaves imported—1808.

Admission of Missouri—1820.

Violent opposition to annexation of Texas—1845.

Emancipation Proclamation—1863.

Rebellion the outgrowth—1861-5.

Year of 1865—Thirteenth Amendment.

343. **Questions prepared by pupils.**—This plan of promoting self-activity and co-operation has been emphasized, from time to time, in this book. Personal experience is the justification for such commendation. Gordy, in his notes To The Teacher, says: "The pupils should be required to prepare a written question on every lesson. The value of this simple device in leading them to note the working of cause and effect cannot easily be measured. If pupils have not been trained to ask such questions they may at first be diffident about it. They will also ask questions that call for yes or no or for single-word answers. With a little judicious help, however, they will soon begin to ask searching questions that will stimulate the interest of the entire class."

344. Outline made by pupils.—We have spoken about making outlines as a means of review. This plan is advocated as one of the best means of teaching pupils how to select and comprehend the essential points in the printed text. It is difficult at first, and needs the personal direction of the teacher; but a little practice in it gives a consciousness of growing power so that the pupil will soon be anxious to follow this kind of individual work.

345. Debates.—History furnishes material for the frequent use of short debates. The value of such exercises is outlined in section 502.

346. Note books.—Elaborate notes are not useful to the elementary pupils. The mere copying of long extracts is not a prudent investment of time or energy. Use note-books for the following purposes:

1. Summaries of work.
2. Special topics or digests of them.
3. Progressive maps.
4. Review questions.
5. References that appeal to the owner of the book.

347. Source method.—The source method of teaching history, as the word source implies, requires students to consult the original documents from which history is written, and then form their conclusions upon that material. This method applied in the elementary schools would be presented in a text-book not in narrative form, but in the form of summaries, tables and brief reproductions of the original documents. For elementary pupils, this method cannot be commended. The pupils lack the foundation knowledge for forming an opinion on the material furnished and, besides, they have not yet acquired habits of study that will enable them to interpret the materials without a great deal of collateral reading. The collateral reading in connection with an authorized text-book in the class may introduce the pupils to the source method in some lines of investigation.

348. **How to arouse interest.**—The summary of the last twenty sections will present a number of points of view on the teaching of history. A condensed expression of the substance of these points of view will give the means of arousing interest in teaching the subject to elementary pupils.

349. **Cause and effect.**—Whatever the method of recitation may be, the training of the judgment will require pupils to trace the relations between cause and effect in all the great events of history. See causal series in geography, section 286.

350. **Progress maps.**—A helpful means of stimulating visualization is the use of progress maps. Outline maps can be secured from publishers and so pupils need take no time in marking the limits of latitude, longitude and boundaries. That part of map-drawing has little educational value. The progress map will then contain the location of the few principal points under consideration. Thus in the study of the early years of the Revolutionary War the map will have the location of Boston, Saratoga, New York, Princeton, Trenton, Philadelphia and Yorktown. A line may indicate Washington's route across from Long Island up the Hudson and then down through New Jersey.

351. **Chronology.**—The learning of long lists of dates is no longer considered a legitimate part of history. The memorizing of particular dates in relation to epochs or periods is all that is essential.

352. **Biography.**—The study of the lives of particular men in connection with the different events in their careers, has been found a fascinating source of interest in history. The importance of the public events must determine the limit of such collateral reading.

353. **Use of outlines.**—We have advocated the use of outlines made by the pupils and now the question arises regarding the use of outlines furnished for guidance in studying. Such outlines would, of course, obviate the making of similar outlines

by the pupils. Teachers differ in their views of the value of such outlines in connection with the study of the advanced lessons, but there is almost unanimous opinion in favor of the outlines in reviewing part or whole of the subject.

354. **Dramatization of historic events.**—Teachers can hardly be expected to put the historic material into dramatic form for presentation in rhetorical exercises, but it is possible to secure such material already dramatized. Such exercises in school will be found one of the most valuable means of promoting a healthy school spirit. A little play called the "Continental Congress," in which pupils take the parts of those who adopted the Declaration of Independence, may be mentioned as an illustration of this phase of the work in history.

355. **Local government.**—The study of the forms and uses of local administration is a part of the early work in all the grades in New York City. It is what is called institutional presentation of history and civics. To impress the utility of such government, many of the schools have adopted forms of pupil self-government to represent the departments in the larger municipal organizations. Wherever the school may be, it is possible for pupils to study the government related to them.

356. **Process of legislation.**—Another means of increasing civic knowledge is for pupils to make a special study of the three departments of government in the state and in the nation. The history of a bill from the time that it is introduced until it has been under judicial approval is one of the valuable topics in relation to history and civics. Turning the class or the school into a legislative body for this purpose is one concrete method of presenting the work.

357. **Pupil self-government.**—See section 90.

358. **Institutional study of history and civics.**—In the five departments of education mentioned in Butler's definition, the institutional inheritance is one of the forms. We have already

mentioned in 355 what is done in this city. For specific reference see section 9.

359. Mental results.—Effort to develop the historic sense in the teaching of history and civics may or may not succeed in attaining the ideal purposes of education as mentioned in the outlines in section 43. Failure of attainment in some cases is no reason for saying that the proper study of history does not give to the average pupil habits of right thinking, right feeling, and right willing.

360. Habituation to civic requirements.—In discussing the ideals of education, citizenship is mentioned as one advocated by Horace Mann and John Dewey. For those who do not wish to consider education a preparation for the hereafter, the ideal of citizenship furnishes a satisfactory standard for effort; and for those who wish to make the supreme aim of education a preparation for the life to come, the ideal citizen may be considered one whose living in this life is a good preparation for the hereafter. The teacher who can influence his pupils to habituate themselves to adapt themselves to the requirements of the community in which they live, is doing all that can be expected from him under the general purposes of history and civics.

Chapter XIV. Arithmetic.

361. New York City view.—Sections 362 to 372 are from the New York City Course of Study. For special study consult McLellan and Dewey's The Psychology of Number, McMurry's Special Method in Arithmetic, David Eugene Smith's The Teaching of Elementary Mathematics, and Young's The Teaching of Mathematics.

362. Suggestions.

"Much oral drill and blackboard work should be given.

Answers should be tested approximately to ascertain whether they are probably correct.

The results of addition, subtraction, multiplication and division should be proved before they are declared.

Excessive repetitions of forms of analysis and elaborate written explanations should not be required.

Definitions should not be required until the meanings of the terms to be defined are fully understood.

363. The combinations.—Special importance is attached to the thorough mastery of the combinations in addition, subtraction, multiplication and division. The following are the steps which should be followed in learning the combinations of each table:

364. Addition and multiplication.

1. Care should be taken that the pupils apprehend the nature of the required operations.
2. The combinations that have been taught in the preceding grade should be reviewed frequently.
3. The results of the new combinations should be determined in addition by counting objects,

and in multiplication by adding the multiplicand as many times as there are units in the multiplier.

4. The entire table should be repeated with the objects in view in addition, and with the addends in view in multiplication.

5. The entire table should be repeated without the objects or addends in view.

6. The results of combinations, miscellaneously presented, should be given without the aid of any form of mnemonics or external devices. If a pupil misses a combination there are two methods of correction : in addition he may be told to count objects, and in multiplication to add numbers ; or he may be required to deduce the result of the combination in question from the nearest combination whose result he knows. (Thus he may ascertain that $6 \times 7 = 42$ from $5 \times 7 = 35$, since 6 sevens are one seven more than 5 sevens.) The former method is objectionable for two reasons : the performance of an isolated example will be of little value to aid association the next time the combination occurs ; and the pupil is in danger of forming the habit of using his fingers as counters. The value of the reference to the nearest known combination consists in the association of the combination in its proper relations with the other terms of a series.

7. Exercises in finding the parts which constitute a number either as addends or as factors should follow the drills on tables.

8. The combinations should be applied in the solution of simple problems.

365. **Subtraction and division.**

1. Each combination in subtraction and in division should be related to its corresponding combination in addition or in multiplication. In subtraction the minuend is the sum and the subtrahend is one of the terms of a combination in addition ; in division the dividend is the product and the divisor is one of the terms of a combination in multiplication.
2. The results should be stated without the relation, in order that they may be given instantly. An error should be corrected by reference to the primary combination.
3. The combinations should be applied in the solution of simple problems, in order that their mastery may be seen to be a means to an end.

366. **Constructive and inventional exercises.**—Aside from the consideration of their educational value, the constructive and inventional exercises of the seventh year have been selected with a twofold purpose in view :

1. To furnish pupils with a knowledge of the essential elementary principles involved in the work in mensuration in grade 8A.
2. To furnish pupils with a knowledge of the constructive principles employed in mechanical drawing and construction and in shop work.

The method of teaching these exercises should be suggestive in form and spirit. Formal demonstrations should never be required.

367. **Problems.**—Numerical relations may be found wherever the mind seeks them ; hence problems may be derived and should be derived from the life of the home, the school, the farm, the laboratory, the factory and the railroad, as well as from the shop and the bank. The limitation of problems to transactions in dollars and cents tends to give practical arith-

metic a purely formal and disciplinary character; on the other hand, excursions into other fields of human activity, while sacrificing nothing of the disciplinary value of the subject, give it a varied and interesting content. Problems may be classified as simple, or those involving only one operation, and as complex, or those involving more than one operation.

368. What to look for in the solution of problems.—The solution of problems should be effected by the discovery of *what is given, what is required, and what is the relation* between these terms. If difficulty is experienced in the determination of the relations between large numbers, small numbers should be substituted.

369. Analysis in solution.—A brief and well expressed form of analysis should be employed in the solution of problems to find a part of a number, to find a number when a part is given, to find what part one number is of another, and to find a number when the number plus or minus a part is given, whether common fractions, decimals, or per cent expressions are involved.

370. Rote work criticised.—The mere manipulation of numbers in a set order, which the pupils accept on authority as the means to a correct answer without comprehending the reason therefor, is a form of rote work that ought not to be tolerated except in the teaching of involved and difficult processes to young children, as for example, the process of long division, or the Euclidean process of finding the greatest common divisor.

371. Progressive advance in difficulties by grades.—The following tabulation shows the progressive advance in the complexity of problems through the grades:

1A.—Simple problems solved without formal explanations.

The children represent the terms by objects and find the results by counting; no term is greater than 10. These involve:

1. Addition and subtraction.
2. Multiplication and division.

1B and 2A.—Simple problems solved without formal explanations.

The children apply the combinations in addition and subtraction as soon as they have mastered them; no term greater than 20. These involve:

1. Addition and subtraction.
   The problems are similar to those in 1A, but the results are found from a knowledge of the combinations involved.
2. Multiplication and division.
   The problems are similar to those in 1A.
   Problems in multiplication are solved by writing the multiplicand as many times as there are units in the multiplier and by adding.
   Problems in division are solved as in 1A by counting.

2B and 3A.—Simple problems solved without formal explanations.

The children apply the combinations in multiplication and division as soon as they have mastered them. These involve:

1. Addition and subtraction.
   The problems involve larger terms than in the preceding grades, and the results are invariably found by aid of the combinations.
2. Multiplication and division.
   The problems are similar to those in 1A, but the results are found from a knowledge of the combinations involved.

3B.—Complex problems solved without formal explanations. These involve:

1. Finding a fractional part of a number.
2. Two operations—relations direct.

4A.—Complex problems solved by analysis. These involve:

1. Finding a number when a fractional part of it is given.

2. More than one operation—relations direct. The problems are similar to those in 3B, but are explained formally by analysis.

4B.—Complex problems solved by analysis. These involve:

1. Finding what fractional part one number is of another.
2. More than one operation—relations indirect.

5A.—Complex problems solved by analysis. These involve:

1. Finding a fractional part of a number.
2. Finding a number when a fractional part is given.
3. Finding what fractional part one number is of another.
4. Other problems usually given under the head of common fractions.

5B.—Complex problems solved by analysis. These involve:

1. Finding a decimal part of a number.
2. Finding a number when a decimal part is given.
3. Finding what decimal part one number is of another.
4. Finding a number when the number plus or minus a fractional or a decimal part is given.
5. Other problems usually given under the head of decimals.

6A and 6B.—Complex problems solved by analysis. These involve in 6A:

1. Finding a per cent part of a number.
2. Finding a number when a per cent part is given.
3. Finding what per cent part one number is of another.
4. Finding a number when the number plus or minus a per cent part is given.
5. The problems usually given under the head of denominate numbers.

These involve in 6B:

1. The first four subdivisions of 6A as applied in business.

   Each should be related to the corresponding problem in which a common fraction instead of a per cent expression is involved.

7A.—Complex problems solved by analysis. These involve:

1. Simple interest—direct case.
2. Metric system.
3. Foreign money.
4. Longitude and time.
5. Common relations.

7B.—Complex problems solved both by analysis and by algebra. These involve:

1. Simple interest—indirect cases.
2. Simple interest—applications.
3. Percentage—indirect cases.
4. Problems solved by proportion.
5. Common relations.

8A.—Complex problems solved by analysis or by algebra. These involve:

1. Mensuration.
2. Business relations.
3. Common relations easily expressed by two unknown quantities."

372. Utility of arithmetic.—The history of mathematics shows that nearly all nations have put special utilitarian value upon arithmetic. Smith thinks the utility of mathematics has been overrated.

373. Historical views.—A brief summary of historical views shows that thinkers have been contributing point by point what some recent writers seem to consider entirely new. A grouping of these respective contributions gives the substance of modern ways of teaching. Consult Smith for full presentation.

1. Busse. Number pictures: number cards of today.
2. Pestalozzi. Observation = perception.
   (a) Know numbers rather than figures.
   (b) Objective presentation; remove objects before drill.
   (c) Much oral abstract drill.
3. Tillich. Special blocks: ratio. See Speer method.
4. Kranckes. Concentric circles. 10, 100, etc. Spiral methods.
5. Grube, 1842. All processes simultaneous. 1 to 10 first year.
6. Tank and Knilling; counting.
   (a) Numbers needed for counting.
   (b) Use number series. 2468, etc.; count objects, then memorize.
   (c) Counting is basis of all elementary operations.
7. German spiral method based on concentric circles.
8. Arithmetic in rhyme.
9. All arithmetic based upon measurement of lines.
10. All arithmetic based upon paper folding.
11. Rein. Correlation.
    (a) Familiar objects in home, nature study, literature, etc.
    (b) Series and method units.
    (c) Formal steps of instruction.

374. **Definition of number.**—Number is a product of the way in which the mind deals with objects in the operation of making a vague whole definite.—McLellan and Dewey, p. 32.

Note that this definition considers the concept of number as the result of a mental process showing quantity. Other views, considered unsatisfactory, are:

(a) "Number is a symbol." Entirely abstract; wrong, not in the mind.

(b) "Number is identical with things; it is a property of objects." Wrong, as concept of number can exist only in the mind.

(c) "Number is a collection of units." "Scientifically worthless," says Smith, p. 100. Why?

375. Counting and measuring.—There is much discussion about whether counting or measuring should come first in teaching number. The Course of Study requires both, but mentions counting first. Measuring requires the self-activity of the pupil, and interest will be stimulated if the pupil understands what he is doing when he is measuring; but he cannot have any definite concept of measurement until he *counts* by using some unit of measurement such as foot, yard, pint, dime, etc. Hence, "all counting is measuring and all measuring is counting," as is said in McLellan and Dewey's Psychology of Number, p. 48; also in Smith, p. 104. When we count books in a library, we *measure* the library; and we measure our weight by *counting* the number of pounds.

The difference between counting and measuring is that in ordinary counting we use an undefined unit, a kind of vague measurement, as: 10 apples, 5 books. This counting of 10 apples or 5 books becomes definite only when weight or value, i. e. *measure*, is known. So the two processes help each other.

376. Aim of primary arithmetic.—The aim of primary arithmetic is the mastery of our material surroundings, not mathematical processes and discipline.—McMurry, p. 19; Smith, chapter II and p. 89.

377. Methods of teaching the concept of number.—It is unnecessary to outline in detail the first steps in teaching pupils to count. Most pupils have a concept of number long before they enter school; all they need is drill in wider application of their knowledge. Some teachers use splints in this drill; others use pencils, rulers, books, or the pupils themselves. The various devices are outlined in the next section, but through

all the variety runs the uniform principle of *concrete presentation.*

The first idea of number is never abstract. Slowly through the years of experience the mental process of abstraction produces the abstract concept of number. Four suggestions for concrete teaching are mentioned in the course of study.

1. Scoring. This is simply a way of indicating the early impressions of number. The Arabic numerals are not so easily made as groups of vertical lines, thus:

1	2	3	4
I	II	III	IIII

   The drawing of such vertical lines to represent numbers is called scoring.

2. By measurements and comparisons. Actual use of pint and quart, five-cent piece and dime. Comparison of groups of objects.
3. Use of toy money in business operations.
4. Use types in concrete problems. Here are the suggestive types:
   (1) If there are 3 apples in one group and 2 apples in another, how many apples are there in both?
   (2) If 3 apples are taken out of a group of 5 apples, how many apples remain?
   (3) If there are 2 plants in a row, how many plants are there in 3 equal rows?
   (4) If 2 plants are placed in a row, how many such rows are required for 6 plants?
   (5) If 6 plants are placed in 3 equal rows, how many plants are there in each row?

"Exercises in counting should aid in column addition and in a mastery of the multiplication tables. Comparisons and objective measurements should lead primarily to thought,

rather than to over-much figure work. Oral work should precede and accompany all written work in every mathematical operation. Small numbers should be used in the illustration of principles."

The counting in the first term is limited to counting by 1's to 20, and by 10's to 100. Later the pupils receive much drill in counting forwards and backwards by 2's, 3's, 4's, 5's, etc. This is the process that gives the foundation for the tables in the four fundamental operations. This paragraph relates to New York City practice.

378. Summary of modes of concrete number operations.—Notice that both measuring and counting are used in each of the devices in this summary.

1. Counting visible objects, as chairs, birds, houses, children, apples, etc.
2. Other objects as tooth-picks, buttons, beads, pencils, fingers, etc.
3. The abacus, cubes, blocks, squares, etc.
4. Demonstrative devices as distribution of papers, books, the marking off of positions at board, the paging of books, counting time on the clock, attendance records, thermometer; in home geography, counting houses, making maps, etc.
5. Standard units as gallon, pound, dollar, bushel, barrel, day, dozen, cubic foot, etc. Variety, practical units, ratios and fractions from use of these.
6. Number pictures made of dots, lines, etc.; dominoes.
7. In decimal scale, splints or tooth-picks in bundles of 10's and 100's.

379. The use of a book by pupils. The safe rule for the time of introducing a text-book in any subject is this: A book should be introduced as soon as children are able to use it to

their own advantage. The average child is not capable of reading well during the first term of school life and so there is little or no advantage for him in trying to use a text-book in arithmetic. For this reason, the work of the first term is largely oral, but as soon as the child is able to make any use of a text-book in arithmetic he should be given that privilege. The work in mathematics should not depend largely upon the hearing ; it is another instance of multiple sense instruction. The interpretation of a printed problem requires more mental effort than the interpretation of a problem written on the board or dictated by the teacher. In the last two ways the pupil depends upon the assistance from the teacher.

380. Devices for drill in primary grades.—All these suggested devices are only different ways in method ; they are not methods in arithmetic. Devices of any kind are intended to attract and maintain attention. Curiosity, competition and success are likely to secure interest. Different devices satisfy a desire for variety, and some of these have permanent value in being ready for use at any time. It is understood, of course, that these devices cover all the four fundamental operations—addition, subtraction, multiplication and division.

1. Cards. Number cards having the combinations on both sides of the card.
2. Charts. Charts made with rubber pen. Figures large enough to be seen from any part of room.
3. Mimeograph work. Copies made by mimeograph admit many uses. Some copies may contain the same work for the whole class ; other copies may have a few additional problems for the faster workers ; a third kind may have different work for each pupil.
4. Text-books. A good text-book—no other kind should be used—has scores of examples suited to drill purposes. Use the book. Teachers may now secure separate books for each grade

and these are excellent supplements to the class text-book.

5. Special work on board.
6. Circle. Figures outside circumference; number in center.
7. Square. Similar to arrangement in 6.
8. Two vertical lines crossing two horizontal lines at right angles giving places for nine figures. Vertical, horizontal and diagonal drill.
9. Dictation under limited time for answers.
10. Competition under recorded time after definite assignment of work.
11. Decimation. This device uses ten as a basis in each of the four fundamental operations. Following is a table in counting:

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
Build to 100	101	102	103	104	105	106	107	108	109

and then drill down and up.

DECIMATIONS IN COMBINATIONS.

0+1= 1	7+8=15	9+4=13
10+1=11	17+8=25	19+4=23
20+1=21	27+8=35	29+4=33
30+1=31	37+8=45	39+4=43
40+1=41	47+8=55	49+4=53
etc.	etc.	etc.

SUBTRACTION.	MULTIPLICATION.
99−6=93	3× 6= 18
89−6=83	3×16= 48
79−6=73	3×26= 78
69−6=63	3×36=108
59−6=53	3×46=138
etc.	etc.

381. How to mark papers.—This topic brings up the question in regard to marking what is right or what is wrong, and also the use of per cents, letters or other means of indicating the worth of answers. Another question arises here, namely, if the answer is incorrect shall we allow anything for right methods of operation? In all problems accuracy is the first test of an answer. Answers are either right or wrong. The simple oral work cannot justly be marked upon any other basis. Later in the life of pupils it may be that the processes should be given some consideration, but the business demand for a correct answer is a criterion always to be kept in mind by the teacher. The use of letters or figures is a matter for individual decision. See 472.

382. The nature of the problems.—In speaking of the various kinds of elementary work we have insisted that the material should be adapted to the capacities of the pupils as well as to the needs of the course of study. These same principles apply in the primary arithmetic. Use problems that are adapted to the actual experience of the child. Such problems are the ones that produce interest at the same time that they give the requisite drill in the work. It is advisable to use problems that are related to the common forms of industry and other forms of life, but in the first grade it is probable that the interests of the children will require a simple presentation of experience in regard to games, toys, home life, etc., more than to the industrial phases of the community. Regarding the method of doing the work, both oral and written practice should be put into use as early as possible. Regarding abstract and concrete examples, both kinds should be used. Accuracy may result from using concrete problems alone, but rapidity can never be acquired without frequent drill on abstract numbers. Much of the work should, of course, be concrete, but as soon as the children are able to perform abstract number operations a part of the daily drill should be devoted to rapid computation in abstract work. A few minutes each day through all

the grades should be set aside for oral computation. It is suggested that in the written work a time limit be set so that each child may be judged according to his recitation. It is not expected that all pupils will be able to solve the same number of problems in the limited time.

383. **Addition.**—This is another application of counting. Some writers speak of addition as a synthesis of the elements of knowledge gained in the first number concepts. But addition is so closely related to the first work in counting that it is not necessary to try set limits between the two kinds of mental operations. Counting by 1's is addition; and surely the counting by 2's, 3's, etc. is giving results in addition, whether called so or not.

The first addition tables are the combinations of numbers of one order with 1 and 2:

1	2	3	4	5	6	7	8	9		2	3	4	5	6	7	8	9
1	1	1	1	1	1	1	1	1		2	2	2	2	2	2	2	2

sums found by counting objects; the value of each number and of each combination, as 3 and 2 are 5, 2 and 3 are 5, should be recognized at sight without counting; the combinations memorized.

A continuation of the drill in addition gives forty-five combinations of digits, taking two figures in each combination. The two sets just given and the following sets show the forty-five combinations.

3	4	5	6	7	8	9
3	3	3	3	3	3	3
—	—	—	—	—	—	—
	4	5	6	7	8	9
	4	4	4	4	4	4
	—	—	—	—	—	—
		5	6	7	8	9
		5	5	5	5	5
		—	—	—	—	—
			6	7	8	9
			6	6	6	6
			—	—	—	—
				7	8	9
				7	7	7
				—	—	—
					8	9
					8	8
					—	—
						9
						9
						—

As soon as the sum of two numbers involves the process of "carrying," two fundamental facts must be taught:

1. Ten *units* make *one ten.*
2. *Place* gives value to a figure.

The practice in counting by 10's is a preparation for both these facts, and the drill on addition giving sums from 10 to 20 will impress the truth.

Decomposition. When the sum is 20 or more, it may be necessary to show units and tens by decomposition, thus:

1. 16+5=?
   16=1 ten+6 units
   =10 units+6 units

   Then 10 units
   +6 units
   +5 units
   ——————
   21 units

   16
   +5
   ——
   21 ans.

2. $24+13 = ?$

$24=2$ tens $+4$ units

$13=1$ ten $+3$ units.

Then 20 units
+ 4 units
+10 units
+ 3 units
37 units.

$$\begin{array}{r} 24 \\ +13 \\ \hline \end{array}$$

37 ans.

3. $87 + 36 = ?$

Now we meet the fact that *ten* tens make *one* hundred.

hundreds	tens	units
	8	7
	3	6
	11	13
1	2	3

$$\begin{array}{r} 87 \\ +36 \\ \hline \end{array}$$

123 ans.

This last form of the work is preferred since so much column addition is required in life. The psychological habit of vertical addition is, therefore, more important than the habit of horizontal addition. Both are combined for proof in the grammar grades. The proof of addition in the primary grades is made by reversing the order of adding. If the first process was from the bottom to the top, then for proof begin at the top and add down.

Equation. The horizontal form of expressing an example in addition gives an equation, thus:

$$32+19=51$$

The expression of equality in mathematics is an equation. The part before the sign of equality is the first member; the part after the sign of equality is the second member.

Laws or principles of addition.

1. Only like numbers can be added.
2. The sum is the same in kind as the addends.
3. If the like orders of units be added separately, the sum is the sum of all the numbers added, since the whole is equal to the sum of all its parts.
4. If the sum of the units of any order contain units of a higher order, these higher units must be combined with units of like order.

384. **Subtraction.**—As addition is considered synthesis in counting, subtraction is analysis in counting. Addition and subtraction may be taught together, using subtraction as the inverse of addition. Sticks, pencils and other concrete devices are used as material, and the child measures the difference in the groups by counting. Considerable facility in rapid subtraction should be secured in the easy combinations before introducing the necessity of "borrowing." Decomposition will be used again to explain the relations of units, tens and hundreds in subtraction. It is only one step from the known process in addition.

1. Decomposition to explain borrowing.

$35-18=?$

$35=3 \text{ tens}+5 \text{ units}=30+5=35$

$=2 \text{ tens}+15 \text{ units}=20+15=35$

$18=1 \text{ ten}+8 \text{ units}=10+8=18$

$1 \text{ ten}+7 \text{ units}=10+7=17$

$$\begin{array}{r} 35 \\ -18 \\ \hline 17 \text{ ans.} \end{array}$$

2. Equal additions to explain borrowing. A few years ago the method of equal additions was widely used among the disciples of Pestalozzian number. It is not used much today, although the axiom still holds, namely: If equal numbers be added to unequal numbers, the difference between the unequal numbers remains unchanged.

35−18 = ? Or $\begin{array}{r} 35 \\ -18 \\ \hline \end{array}$

35+10=3 tens+15 units=30+15=45
18+10=2 tens+ 8 units=20+ 8=28

1 ten + 7 units=10+ 7=17

$\begin{array}{r} 35 \\ -18 \\ \hline \end{array}$

35−18=17 ans. Or 17 ans.

This operation has combined the use of decomposition with equal additions to make the number of units in the minuend greater than the number of units in the subtrahend.

3. Complementary addition in subtraction. This method is an application of addition, thus:

$\begin{array}{r} 764 \\ -478 \\ \hline \end{array}$

286 ans.

Instead of saying 8 from 14, we observe that 6 added to 8 will make 14, and the process becomes 8+6=14, 8+8=16, 5+2=7. This method is mentioned by Smith in the next paragraph.

4. Four ways of performing subtraction.

In subtracting 297 from 546, we have the two old plans, both dating from the time of the earliest printed text-boooks, at least. The calculation is substantially this:

546
297
249

(1) 7 from 16, 9; 9 from 13, 4; 2 from 4, 2; or
(2) 7 from 16, 9; 10 from 14, 4; 3 from 5, 2.

But we have also a more recent plan:

(3) 7 and 9, 16; 10 and 4, 14; 3 and 2, 5.

To this might be added a fourth plan, which has some advocates:

(4) 7 from 10, 3; 3 and 6, 9; 9 from 10, 1; 1 and 3, 4; 2 from 4, 2.

All four of these plans are easily explained, the first rather more easily than the others. But the third has the great advantage of using only the addition table in both addition and subtraction, and of saving much time in the operation. It is the so-called "Austrian method" of subtraction. The fourth plan, while a very old one and possessed of some good features, is so ill adapted to practical work as to have no place in the school. It is hardly necessary to say that the old expressions "borrow" and "carry" in subtraction and addition are rapidly going out of use; they were necessary in the old days of arbitrary rules, but they have no advocates of any prominence to-day.—Smith, p. 121.

Principles of subtraction.

1. Only like numbers can be subtracted.
2. If the units of each order in the subtrahend be taken separately from the units of like order in the minuend, the sum of the differences equals the entire difference of the given numbers. Axiom: The whole equals the sum of all its parts.
3. If both minuend and subtrahend be equally increased the difference will not be changed.

Proof of subtraction. Add difference and subtrahend; or subtract difference from minuend to get subtrahend; or cast out 9's. See 410.

385. Multiplication.—This process is treated as synthesis in taking one number a certain number of times. Multiplication is a short form of addition, and this close relation of the two processes is mentioned in 364.

1. For first steps, arrange and count concrete objects as in addition and subtraction.
2. Use decomposition again to explain multiplication by one figure.

$$\begin{array}{r} 28 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 28=20+8 \\ 20\times\ 3=60 \\ 8\times\ 3=24 \\ \hline 28\times\ 3=84 \end{array}$$

3. Decomposition to explain multiplication by two figures.

$$\begin{array}{r} 67 \\ \times 23 \\ \hline \end{array}$$

$$\begin{array}{r} 67\times\ 3=\ 201 \\ 67\times 20=1340 \\ \hline 67\times 23=1541 \end{array}$$

4. Another form for 3.

$$\begin{array}{r} 67 \\ \times 23 \\ \hline 201 \\ 1340 \\ \hline 1541 \end{array}$$

Multiplying by 3 units we have 201 units; multiplying by 20 units we have 1340 units. The sum of these partial products is 1541 units.

Since 1340 units = 134 tens, we omit the cipher, and write 134 as tens. This shorter process gives the final form.

thousands	hundreds	tens	units
		6	7
		×2	3
	2	0	1
1	3	4	
1	5	4	1

5. Multiplication by factors.

3546
×24
3546
×6
21276
×4
85104

Variety is one advantage, a means of proof is another, and a practice in analysis of numbers is a third.

6. Multiplication tables. Learning these tables by the memory process alone is condemned. All the work in counting by 1's, 2's, 3's, etc., is a preliminary preparation. The combinations in the four operations are another aid; and then the *use* of acquired knowledge in measuring with foot-rule, yard-stick, toy money, pints, quarts, etc.,—all help the pupils to construct the tables out of personal experience in counting and measuring.

The order of learning the tables is not that of the old books. An easy order is as follows: 10's, 2's, 5's, 4's, 8's, 3's, 6's, 9's, 7's. This order starts with 10's as the easiest; then the 2's are not difficult; the 5's easily unite with the 10's and the 2's;

so, too, the 4's and the 8's, and then 3's, 6's and 9's. The 7's are not closely related with any other table; but by leaving the 7's till the last, all the combinations in the 7's are then covered by the other tables. Other opinions favor a different order of procedure, but McMurry upholds this one.

Principles of multiplication. When either factor contains more than one figure, the principles are as follows:

1. The product is the same, whichever factor is used as multiplier.
2. If one factor be units of the first order, the product will be the same in kind as the other factor.
3. If units of each order in the multiplicand be taken separately as many times as there are units in the multiplier, the sum of the products equals the entire product of the given numbers.

Proof of multiplication. Divide product by multiplier to get multiplicand; or invert order of factors and multiply; or cast out 9's. See 410.

386. Division.—An analytic process, the inverse of multiplication, and a short form of subtraction. Early work is concrete, and the first notions of division are gained through the medium of the common fractions $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ in the first grade.

1. Short division is only the inverse of the combinations in multiplication.
2. Long division by decomposition.

$$\begin{array}{rr} 684\div 2=? & \\ 600\div 2= & 300 \\ 80\div 2= & 40 \\ 4\div 2= & 2 \\ \hline 684\div 2= & 342 \text{ ans.} \end{array}$$

Other forms.

```
2)684(342        342
  6            2)684
 ---              6
  8               ---
  8               8
 ---              8
  4               ---
  4               4
 ---              4
                  ---
```

3. A more difficult example.

```
2)674(337
  6
 ---
  7
  6
 ---
 14
 14
 ---
  0
```

We say 674=6 hundreds, 7 tens, 4 units. 6 hundreds ÷2=3 hundreds. Bring down 7 tens; 7 tens ÷2=3 tens and 1 ten remaining. 1 ten and 4 units =14 units; 14 units ÷2=7 units. The quotient is 3 hundreds, 3 tens, 7 units, or 337.

4. Division by factors.

```
3864÷24=?
4)3864
 ------
6)966
 ------
 161 ans.
```

5. Laws or principles of division.

(1) Dividing a number by one of its factors gives the other factor.

(2) When the divisor is an abstract number, the quotient and the dividend are like numbers.

(3) When the dividend and the divisor are like numbers, the quotient is abstract.

(4) To prove division, multiply quotient and divisor to reproduce dividend.

387. **Grube method: characteristics, advantages.**—The leading characteristic of this method is that it tries to teach the four fundamental processes with each number before the next number is taken up. It is an application of the old idea of teaching in "concentric circles." Advantages claimed: simplicity and thoroughness.

388. **Objections to the Grube method.**

1. A unit not a fixed thing. The natural beginning of number is a whole—needing measurement, while Grube says that one thing is the natural beginning.
2. Different processes are not equally difficult.
3. Free range among higher numbers excluded.
4. Synthetic only; memory drill.

These four objections are from McLellan and Dewey. The following are from Smith, p. 91:

1. It carries objective illustration to an extreme, studying numbers by the aid of objects for three years, until 100 is reached.
2. It attempts to master each number before taking up the next, as if it were a matter of importance to know the factors of 51 before the child knows anything of 75, or as if it were possible to keep children studing 4 when the majority know something of 8 before they enter school.
3. It attempts to treat the four processes simultaneously, as if they were of equal importance or of equal difficulty, which they are not.

389. **Speer method.**—This is an attempt to teach concretely that ratio is number. Judgments of relative magnitude are secured by using the type forms—cubes, prisms, etc.—in getting the concept of number. Criticism. Not a direct use of materials in daily life; from complex to simple.

390. **Spiral method.**—The old arithmetics sought to master every topic, such as least common multiple, before proceeding

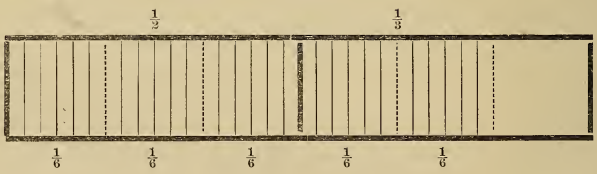
to the next topic. It was impossible. The extreme reaction produced the spiral method of treating several topics in each chapter or lesson.

"It consists in taking the class around a circle, say with the topics of common fractions, decimal fractions, greatest common divisor, and square root: then swinging around again on a broader spiral, taking the same topics, but with more difficult problems; then again, and so on until the subjects are sufficiently mastered."—Smith, p. 119.

Query: How many topics can be profitably treated together?

391. Graphic methods.—Graphic methods include all objective ways of aiding visualization, such as writing, drawing, pictures, cubes, etc. Technically, a graph is a line representing variations of temperature, price, population, class standings, etc.

Illustration. Add ½ and ⅓.



$$\frac{1}{2}=\frac{3}{6}$$

$$\frac{1}{3}=\frac{2}{6}$$

$$\frac{1}{2}+\frac{1}{3}=\frac{3+2}{6}=\frac{5}{6}$$

392. Multiples.—A multiple of a number exactly contains that number. A common multiple of two or more numbers exactly contains each of the numbers. The least common multiple of two or more numbers is the least number that exactly contains each of the numbers.

1. The process of finding a multiple is simplified by finding the prime factors of each number and then multiplying those factors. The least common multiple is the product of the prime factors, each taken the greatest number of times it is found in any one of the numbers.

2. Factoring by inspection. This process follows easily as a result of knowing the combinations.

   Find l. c. m. of 20, 30 and 70.

   $20=2\times2\times5$
   $30=2\times3\times5$
   $70=2\times5\times7$

   The factors common to all the numbers are 2 and 5. The factors not common to some of the numbers are 2, 3 and 7. Hence, according to the rule in 1, l. c. m. $=2\times5\times2\times3\times7=420$.

3. Second process. Actual division. Find l. c. m. of 15, 60 and 75.

5	15	60	75
3	3	12	15
2	1	4	5
		2	5

   Hence, l. c. m. $=5\times3\times2\times2\times5=300$.

4. Third process. Numbers not easily factored by inspection. Find l. c. m. of 849 and 1132.

   (a) Find greatest common divisor.

$$
\begin{array}{r}
849\,)\,1132\,(\,1 \\
\underline{\;\;849\;\;} \\
283\,)\,849\,(\,3 \\
\underline{\;\;849\;\;} \\
\end{array}
$$

(b) Find other factors.

283	849	1132
	3	4

(c) $283 \times 3 \times 4 = 3396$ l. c. m.

393. Divisors.—This topic is logically arranged before multiples in text-books.

A divisor is a number that exactly divides another number.

The greatest common divisor is the largest exact divisor of two or more numbers.

A prime factor is a divisor having no other factors than itself and one.

Laws relating to greatest common divisor.

1. A divisor of a number is a divisor of any number of times that number.
2. A divisor of any two numbers is a divisor of their sum and also of their difference.

(1) The g. c. d. of two or more numbers is the product of all their common prime factors. Found, in first case, by inspection.

What is g. c. d. of 42, 56 and 70?

$$42 = 2 \times 3 \times 7$$
$$56 = 2 \times 2 \times 2 \times 7$$
$$70 = 2 \times 5 \times 7$$

Here we see that 2 and 7 are the only prime factors common to the three numbers. Hence, $2 \times 7 = 14$ g. c. d.

(2) Second process is by division to find prime factors.

Find g. c. d. of 105, 35, 70.

5	105	35	70
7	21	7	14
	3	1	2

The common factors are 5 and 7; not common, 3 and 2. Hence, $5\times7=35$ g. c. d.

(3) Third process is by long division when the numbers are not readily factored. This process involves the laws stated for g. c. d.

Find g. c. d. of 42 and 138.

$$\begin{array}{r} 42)138(3 \\ 126 \\ \hline 12)42(3 \\ 36 \\ \hline 6)12(2 \\ 12 \\ \hline \end{array}$$

We need to give analysis of this process to show that 6 is g. c. d.

It is evident that 42 is the greatest divisor of itself; if it is an exact divisor of 138, 42 is g. c. d. Trial shows that 42 is not an exact divisor of 138. The remainder is 12. By axiom any divisor of 42 is a divisor of 3 times 42 or 126; and a divisor of 126 and 138 is a divisor of their difference 12. Hence g. c. d. is not greater than 12. Now any divisor of 12 and 42 is a divisor of 138 which is the sum of 12 and 3×42. Thus the problem is to find g. c. d. of 12 and 42.

A similar reasoning brings us to 6 and 12. But 6 is divisor of 12; hence, 6 is g. c. d.

394. Common fractions. Familiarity with common fractions is a natural result of the gradual introduction of this work. Fractional parts are introduced during the first year in arithmetic, and then the passing from the known ½, ⅓, ¼, etc., to the related unknown in larger fractions is going from the simple to the complex. Addition, subtraction and division of

fractions is best explained by reducing to common denominators. The method of common denominators may not be the usual one in division of fractions but it is a logical step since the children become familiar with the meaning of common denominators in addition and subtraction. It may be needless repetition to say that all of the introductory practice in common fractions should be based upon the use of objects with which the children are familiar.

There are two conceptions of fractions, which a teacher should keep in mind : A fraction is one or more of the equal parts of a unit; a fraction is simply an indicated operation in division.

The concept of *half* of a familiar object is not difficult. An easy approach is indicated in the course of study. "Halves and fourths, thirds and sixths of single objects; paper folded into two equal parts; into four equal parts, into three equal parts, and into six equal parts; objects cut into two, into four, into three, and into six equal parts and one or more of them named. The same should be illustrated by drawings." Then pupils have the three ways of bringing their ideas into one clear concept: objects divided into parts ; the words half, fourth, etc, written; the forms $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, etc.

There are three principles to be made clear in fractions. The teacher observes them at all times but pupils may know many of the processes before the rules are comprehended. These are the principles:

1. Multiplying or dividing both numerator and denominator of a fraction by the same number does not change the value of the fraction.
2. Multiplying the numerator or dividing the denominator of a fraction by a number multiplies the fraction by that number.
3. Dividing the numerator or multiplying the denominator of a fraction by a number divides the fraction by that number.

FUNDAMENTAL PROCESSES.

1. Changing to equivalent fractions. This depends upon the multiplying mentioned in the first principle. The approach is made during the first steps in halves, fourths, sixths, etc., by noting equivalents, thus:

$\frac{1}{2}=\frac{2}{4}=\frac{3}{6}$

$\frac{1}{3}=\frac{2}{6}$

$\frac{2}{3}=\frac{4}{6}$

Then follow simple exercises which prepare for succeeding processes.

$\frac{1}{3}=\frac{\ }{6}$ $\qquad$ $\frac{2}{7}=\frac{\ }{14}$

$\frac{2}{5}=\frac{\ }{10}$ $\qquad$ $\frac{3}{7}=\frac{\ }{28}$

$\frac{1}{6}=\frac{\ }{12}$ $\qquad$ $\frac{5}{8}=\frac{\ }{40}$

Change $\frac{1}{4}$ to eighths, $\frac{2}{3}$ to ninths, $\frac{3}{4}$ to twelfths, $\frac{5}{6}$ to eighteenths.

2. Reduction to lowest terms. Apply division of terms in principle one to $\frac{2}{4}$, $\frac{6}{8}$, $\frac{7}{14}$, $\frac{5}{10}$, $\frac{3}{6}$, $\frac{10}{12}$, $\frac{16}{24}$.

3. Changing to whole or mixed numbers; as, $\frac{3}{2}$, $\frac{6}{4}$, $\frac{8}{3}$, $\frac{12}{5}$, $\frac{24}{7}$.

4. Addition. Recall that only like numbers can be added. 2 bu.+8 bu.=10 bu. To add $\frac{2}{4}$ and $\frac{6}{8}$, change so that pupils will see 4 eights + 6 eights=10 eights. Thus $\frac{4}{8}+\frac{6}{8}=\frac{10}{8}$. Addition is well presented in most of the text-books. For further exercises, consult any approved text.

5. Subtraction. No new operations or principles here. Apply common denominator again.

6. Multiplication. This operation appears easy. Take multiplication of fraction by whole number first. Proceed as follows:

$\$7 \times 5 = \$35.$

7 dollars $\times 5 = 35$ dollars.

7 tenths $\times 8 = 56$ tenths.

$\frac{7}{10} \times 8 = \frac{56}{\text{tenths}}$

"Let us illustrate by teaching the multiplication of a fraction by an integer. Preparation consists of making sure that the learner has in mind the knowledge thru which the discovery of the general principle is to be made. What does $\frac{3}{8}$ denote? What does the denominator denote? What does the numerator denote? Presentation consists in selecting an example and in finding a method of performing the operation. This may be done objectively or abstractly. We will choose the former. Let us take $\frac{3}{8} \times 2$. We will draw a circle, separate it into eight equal parts, and shade three of them to represent $\frac{3}{8}$. Multiplying $\frac{3}{8}$ by 2 we obtain six of these parts, or $\frac{6}{8}$. To multiply $\frac{3}{8}$ by 2, we multiply the numerator. Comparison consists in showing that every other example in the multiplication of a fraction by an integer is exactly similar to $\frac{3}{8} \times 2$ in all respects essential to the demonstration. This is true because multiplying the numerator of every fraction by an integer will multiply the number of equal parts that are taken without affecting the size of the parts. Generalization consists in stating the general principle. To multiply a fraction by an integer, multiply the numerator. Application consists in following this general principle in the solution of individual examples. Multiply $\frac{8}{13}$ by 9. $\frac{8}{13} \times 9$ is an example in the multiplication of a frac-

tion by an integer; to multiply a fraction by an integer, multiply the numerator; to multiply $\frac{8}{13}$ by 9, multiply the numerator."—L. H. Bailey, New York Training School for Teachers, in N. E. A. Report for 1905, p. 383.

The next work is to multiply a fraction by a fraction. Development may be as follows:

$\$\frac{3}{4} \times \frac{2}{3} = ?$
$\$\frac{3}{4} \times 1 = \$\frac{3}{4}$
$\$\frac{1}{3}$ of $\frac{3}{4} = \$\frac{1}{4}$
$2 \times \frac{1}{4} = \$\frac{2}{4}$ or $\$\frac{1}{2}$ ans.

In the second step we have used 1 as a multiplier; process understood from last paragraph. With a multiplier $\frac{1}{3}$ as large, the product is $\frac{1}{3}$ of $\$\frac{3}{4}$ or $\$\frac{1}{4}$. Using $\frac{2}{3}$ instead of $\frac{1}{3}$ as multiplier, the product is twice as large; hence, 2 times $\$\frac{1}{4}$ or $\$\frac{1}{2}$. The same result may be secured in a shorter process by multiplying the numerators for a new numerator and the denominators for a new denominator.

Continued multiplication is a larger application. Use cancellation to review divisors and reduction to lower terms. Emphasize cancellation as a short, practical process.

$\frac{5}{6} \times \frac{15}{44} \times \frac{9}{10} \times \frac{35}{48} = ?$

FAULTY ARRANGEMENT.

Find cost of $3\frac{1}{3}$ yards at $\$2\frac{1}{2}$ a yard.

$\$2\frac{1}{2} = \$\frac{5}{2} \times \frac{10}{3} = \$\frac{50}{6} = \$8\frac{1}{3}$.

This statement of the operation does not give mathematical truth. It says $\$2\frac{1}{2} = \$8\frac{1}{3}$. Economy of time and brevity of form are not advantages here. Arrange the work in steps.

$\$2\frac{1}{2}=\$\frac{5}{2}$

$3\frac{1}{3}$ yards $=\frac{10}{3}$ yards.

$\$\frac{5}{2}\times\frac{10}{3}=\$\frac{50}{6}=\$8\frac{1}{3}$.

$\$8\frac{1}{3}$ ans.

7. Division. Recall the third principle and apply it. The first case is division of a fraction by a whole number.

$\$18\div 3=\$6$

18 dollars $\div 3=6$ dollars.

18 twentieths $\div 3=6$ twentieths.

$\frac{18}{20}\div 3=\frac{6}{20}$

When the numerator is not exactly divisible, the denominator must be multiplied by the divisor. This is one process that is mastered long before the reasons are understood. Take this: If 4 pads cost $\$\frac{3}{5}$, what is the cost of one pad? Here the process must be by multiplication of denominator, and the answer is $\$\frac{3}{20}$ or 15 cents.

To divide a fraction by a fraction. Another case of learning process before understanding rule.

$\frac{7}{8}\div\frac{2}{3}=\ ?$

$1\div\frac{1}{3}=3$

$\frac{1}{2}$ of $3=\frac{3}{2}$

$\frac{7}{8}$ of $\frac{3}{2}=\frac{21}{16}$

Required to divide $\frac{7}{8}$ by $\frac{2}{3}$. Taking the unit 1 instead of $\frac{7}{8}$, we find that $\frac{1}{3}$ is contained 3 times in 1. Then $\frac{2}{3}$ is contained in 1 one-half of 3 times or $\frac{3}{2}$. As $\frac{7}{8}$ is only $\frac{7}{8}$ of 1, the true quotient is $\frac{7}{8}$ of $\frac{3}{2}$ or $\frac{21}{16}$. We see that a shorter process to this same result is to invert the terms of the divisor and multiply.

$\frac{7}{8}\times\frac{3}{2}=\frac{21}{16}$

Another explanation of inversion of terms in division of fractions.

$\frac{7}{8}\div\frac{2}{3}=?$

$\frac{7}{8}\div 2=\frac{7}{16}$

$3\times\frac{7}{16}=\frac{21}{16}$ ans.

Or, $\frac{7}{8}\times\frac{3}{2}=\frac{21}{16}$ ans.

We used 2 as the divisor instead of $\frac{2}{3}$, and the quotient is $\frac{7}{16}$. But the divisor 2 is 3 times too large ; hence, the quotient $\frac{7}{16}$ is 3 times too small. Then to obtain true quotient, we must take 3 times $\frac{7}{16}$. The same answer could be secured by the shorter process of inversion and multiplication.

Another case is to divide a whole number by a fraction. This case is usually treated before dividing a fraction by a fraction. But after using inversion, we have a simple procedure :

$$7 \div \tfrac{3}{4} = ?$$
$$\tfrac{7}{1} \div \tfrac{3}{4} = ?$$

Here the use of the denominator 1 gives a case exactly like the last one under inversion.

TYPE EXAMPLES IN FRACTIONS. SEE 371.

1. To find a fractional part of a number.
   A father left $\frac{2}{3}$ of his farm of 840 acres to his son. How many acres did the son receive ?
2. To find a number when a fractional part of it is given.
   Robert used $\frac{2}{3}$ of his money in paying $4 for books. How much money had he at first ?
3. To find what fractional part one number is of another.
   Lena had eighteen cents and paid six cents for a pad. What part of her money did she spend?

395. Decimal fractions.—The relation of decimal fractions to common fractions is treated under three views. The first opinion favors the teaching of decimal fractions as an extension of the decimal system of United States money and the decimal systems of money, weights and measures in certain foreign countries.

The second view makes decimal fractions the equivalents of certain types of common fractions. This means, then, simply

another kind of notation, and for this reason many text-books treat common fractions and decimal fractions together.

The third view considers decimal fractions very difficult for a child to comprehend on account of so many large denominators. For this reason the subject is treated in a separate chapter after common fractions have been mastered.

We need not try to decide whether decimal fractions should be taught before common fractions, simultaneously with them or after them. The vital point is clearness in presentation; and a satisfactory way seems to be to unite the first two opinions and proceed from the known decimal scale of United States money and the known types in common fractions such as $\frac{1}{10}$, $\frac{2}{10}$, $\frac{3}{10}$, $\frac{1}{100}$, $\frac{2}{100}$, $\frac{3}{100}$, $\frac{1}{1000}$, $\frac{2}{1000}$, etc.

The decimal point. The one new feature of decimals is the decimal point. Pupils know numerator, denominator, terms of fraction, value of fraction, fractional unit and the four operations. The use of the decimal point need not be entirely new in decimals. During the third year of school pupils write such amounts as \$2.60, \$18.74 and others. They add and subtract such amounts, putting the decimal points under each other. They learn the name decimal point but they do not know the laws of decimals. An authority on this is Handbook to Smith's Arithmetics, p. 33 (Ginn). The specific use of the decimal point in decimals is established by changing $\frac{1}{10}$, $\frac{2}{10}$, $\frac{3}{10}$, etc. to equivalent decimals. The application to hundredths, thousandths and other orders will follow, of course, to bring out these principles:

1. Moving the decimal point one place to the right increases the value tenfold; moving two places to the right increases the value one hundredfold, etc.

$$0.082$$
$$0.82 = 10 \times 0.082.$$
$$8.2 = 100 \times 0.082.$$

2. Moving the decimal point one place to the left decreases the value tenfold; two places, one hundredfold, etc.

0.882
.0882 $= 0.882 \div 10$
.00882 $= 0.882 \div 100.$

3. Ciphers annexed or rejected at the right of a decimal do not change the value of the decimal.

$.88 = .880.$

The matter for lessons on decimals may be found in any good text. The scope of such lessons is indicated here to aid those who are preparing for examinations.

NOTATION AND NUMERATION.

1. Matter. Examples covering reading or interpretation; writing decimals; reading and writing mixed decimals. Do not use *and* in reading whole numbers like $125; but use *and* in place of the decimal point. $125.60=one hundred twenty-five dollars *and* sixty cents.

2. Arrangement.

(a) Add:

$18.65	13.46 inches
12.48	8.92 inches
6.22	2.15 inches

(b) $126.18+ $415.92+$75.86.

(c) 74.12 ft. + 18.7 ft. + . 6 ft.

(d) 270.40+186.90+23.04.

(e) Read:

$\frac{7}{10}$, $\frac{17}{100}$, $\frac{170}{1000}$, $\frac{1700}{10000}$

0.6, .16, .160, .175, 2.8.
.705, .023, .003, 7.05, 0.23.
6.306, 42.0094, .3678.

(f) Write in figures:

Fifteen hundredths.

Seven thousandths.

One hundred eighty ten-thousandths.

Forty-four and six hundredths.

(g) Write in words:

$\frac{596}{1000}$, $\frac{8}{100}$, $\frac{17}{10}$, $\frac{463}{10000}$

.0024 0.8, 7.16, 384.681.

3. Rules. Read the decimal as an integer, and give it the name of its righthand order.

To write decimals: Express the numerator in figures, and then place the decimal point so that the last righthand figure shall express the denomination of the decimal.

ADDITION AND SUBTRACTION.

Write the numbers so that the decimal points shall be in the same column, and then add or subtract respectively as in whole numbers.

MULTIPLICATION.

1. Matter. Five or more examples in common fractions and decimals to satisfy inductive process.
2. Arrangement.
   (a) Multiply $\frac{3}{10}$ by $\frac{84}{100}$

   $\frac{3}{10}\times\frac{84}{100}=\frac{252}{1000}$.

   $.3\times.84=.252$.

   (b) $\frac{12}{100}\times\frac{75}{100}=\frac{900}{10000}$

   $.12\times.75=.0900$.

   (c) 3×0.4, $3\times.04$, $3\times.004$.

   (d) $54.6\times.30$.

   (e) $0.24\times.254$.

3. Rule. Multiply as in whole numbers, and point off as many places in the product as there are decimal places in both multiplicand and multiplier.

DIVISION.

1. The old way is analogous to the plan used in multiplication, namely, from common fractions to equivalent decimal fractions. This shows the reason for the rule that the quotient contains as many decimal places as the decimal places in the dividend exceed the decimal places in the divisor.

2. Austrian method. In division we have also an "Austrian method," a valuable arrangement. It is not long since a problem like 6.275 divided by 2.5 was "worked" by a rule which was rarely developed. Now the work is arranged in this way :

	2.51
2.5)6.275	25)62.75
	50
	12.75
	12.5
	0.25
	0.25

Such an arrangement leaves no trouble with the decimal point, and the work is easily explained. In the above problem the entire remainder is brought down, and the decimal point is preserved throughout, as should be done until the process is thoroughly understood ; then the abridgment should appear.—Smith, p. 122.

TYPE EXAMPLES IN DECIMALS. SEE 371.

1. To find a decimal part of a number. The distance from Cortland to Ithaca is 20 miles. A boy walks .7 of the way in one day. How far did he walk?

2. To find a number when a decimal part of it is given.

   Eugene earned $14 which is .7 what his father earned. How much did his father earn?

3. To find what decimal part one number is of another.

   A pupil failed on three out of twelve problems on an examination. What decimal part of the whole test was incorrect?

4. To find a number when the number plus a decimal part is given.

   The sixth grade had an attendance of 48, which was .20 larger than the fifth grade attendance. How many pupils in the fifth grade?

5. To find a number when the number minus a decimal part is given.

   Use smaller for larger in problem 4.

396. Denominate numbers.—This part of arithmetic has been mentioned several times in illustrating the application of concrete or objective methods of teaching. All the tables now used are taught by measuring and counting. This is one application of the maxim, "Turn to use." Toy money in actual problems makes the way to the table of United States money; familiar use of the foot-rule and yard-stick leads to the table of linear measure; the measurement of desks, boards, floor and walls shows a need for square measure; one more dimension in the schoolroom, in boxes, bins, crates, cellars, etc., introduces cubic measure. Likewise in dry measure, liquid measure and avoirdupois weight. The inference is that the tables should be built, constructed or made according to actual uses instead of being memorized first and then applied. It is the inductive method instead of the deductive method.

397. Percentage.—Percentage is a direct outgrowth of the use of common fractions and decimal fractions. When we come to speak of the different methods of presenting the work

in percentage, fractions suggest two of the methods, namely: what is called the fractional method or that of common fractions, and the decimal method or that of decimal fractions. A third method is the algebraic method commonly known as the equation. The use of the old formulas for base, rate, percentage, amount and difference is no longer sanctioned.

METHOD OF COMMON FRACTIONS.

This method is a favorite one because (a) it uses the knowledge of common fractions; (b) cancellation is employed as a short, useful, pleasant process; and (c) there is little to distract the child's attention under such a direct process.

This use of fractions may be arranged according to difficulties.

(a) Fractions that cannot be reduced to lower terms; $\frac{3}{100}$, $\frac{7}{100}$, $\frac{9}{100}$, $\frac{13}{100}$, $\frac{61}{100}$.

(b) Fractions that can be reduced to lower terms; as $\frac{8}{100}$, $\frac{12}{100}$, $\frac{18}{100}$, $\frac{46}{100}$.

(c) Complex fractions; as, $3\frac{2}{3}$, $5\frac{1}{2}$, $7\frac{1}{4}$, $8\frac{7}{15}$. A caution should be observed against the use of large numbers in complex fractions. Such fractions are useless if they go beyond the demands of ordinary business life.

(d) Aliquot parts; as $16\frac{2}{3}=\frac{1}{6}$, $33\frac{1}{3}=\frac{1}{3}$. A chart showing the equivalent aliquot parts should hang in every classroom.

$12\frac{1}{2}=\frac{1}{8}=12\frac{1}{2}\%=.125$

$25=\frac{1}{4}=25\%=.25$

$37\frac{1}{2}=\frac{3}{8}=37\frac{1}{2}\%=.375$

$50=\frac{1}{2}=50\%=.50$

$62\frac{1}{2}=\frac{5}{8}=62\frac{1}{2}\%=.625$

$75=\frac{3}{4}=75\%=.75$

$87\frac{1}{2}=\frac{7}{8}=87\frac{1}{2}\%=.875$

$$16\tfrac{2}{3}\text{ on }100 = \tfrac{1}{6} = 16\tfrac{2}{3}\% = .16\tfrac{2}{3}$$
$$33\tfrac{1}{3}\text{ on }100 = \tfrac{1}{3} = 33\tfrac{1}{3}\% = .33\tfrac{1}{3}$$
$$66\tfrac{2}{3}\text{ on }100 = \tfrac{2}{3} = 66\tfrac{2}{3}\% = .66\tfrac{2}{3}$$
$$83\tfrac{1}{3}\text{ on }100 = \tfrac{5}{6} = 83\tfrac{1}{3}\% = .83\tfrac{1}{3}$$

$$20\text{ on }100 = \tfrac{1}{5} = 20\% = .20$$
$$40\text{ on }100 = \tfrac{2}{5} = 40\% = .40$$
$$60\text{ on }100 = \tfrac{3}{5} = 60\% = .60$$
$$80\text{ on }100 = \tfrac{4}{5} = 80\% = .80$$

Other aliquot parts may be used and other arrangements on the chart may be preferred. The given plan emphasizes the grouping of the aliquot parts as common fractions in their simplest form as given in the second column. Pupils should memorize this chart.

METHOD OF DECIMAL FRACTIONS.

The table of aliquot parts may be used as a table of equivalents also. Then the applications of decimal fractions in percentage are matters of substituting the equivalent decimal for the common fraction. The interpretation of the problem brings nothing new; the operation itself is the same; and the regular principles of decimals are adequate.

THE EQUATION IN PERCENTAGE.

This is a valid use of algebra to simplify relations and processes in arithmetic. The early work in arithmetic has made pupils familiar with such examples as these:

$$6\times\ ?=48?$$
$$7\times\ ?=63?$$
$$11\times\ \$?=\$132?$$

The next step is to see that pupils understand that per cent means hundredths, hundredth or of a hundredth; as

6 per cent means 6 hundredths.
1 per cent means 1 hundredth.
$\frac{1}{8}$ per cent means $\frac{1}{8}$ of a hundredth.

The third step in teaching the equation is to impress again the meaning of the symbols $\frac{6}{100}$, .06 and 6%. The table of equivalents should show that all three forms mean the same.

A fourth step is a review of the decimal method in percentage. These preparatory steps are really a review of all the work in percentage. Then the pupils are ready for the equation.

6x ?=30?
6 times what number=30?
6x=30. By algebra.
If 6 x=30, what is the value of x?
If $\frac{1}{3}$ x=30, what is the value of x?
If $\frac{1}{2}$ x=30, what is the value of x?
If $\frac{5}{10}$ x=30, what is the value of x?
If .5 x=30, what is the value of x?
If 0.05x=30, what is the value of x?
If 0.005x=30, what is the value of x?

Application:
$12 is 4% of how many dollars?
$13 is 4$\frac{1}{8}$% of now many dollars?
20 miles is 5% of how many miles?

Form:
0.04 x=$12
0.04$\frac{1}{8}$x=$13
0.05 x=20 miles.

For problem solved, see 522.

TYPE EXAMPLES IN PERCENTAGE. SEE 371.

1. To find a per cent of a number.
In a school of 1500 pupils 20% are absent during a storm. How many absent?

2. To find a number when a per cent of it is given.
   A clerk pays $6 a week for board. If this is 30% of his salary, find amount of salary.
3. To find what per cent one number is of another.
   Forty-two pupils in a class of fifty are promoted. Find per cent promoted.
4. To find a number when the number plus a per cent part is given.
   A teacher receives $660, which is 10% more than she received last year. Find last year's salary.
5. To find a number when the number minus a per cent part is given.
   A teacher pays $180 for board. If this is 10% less than she paid last year, find cost of last year's board.

398. The syllogism used.—The solution of problems employs the syllogism although students are not conscious of using this form of reasoning. Bailey discusses this topic in the N. E. A. Report, 1905, page 384. He calls the process of reasoning *traduction.* He says: "Three statements are involved. The major states the relation between the required term and the given term; the minor states that the given term is equivalent to a second term; and the conclusion makes the same statement involving the second term which the major premise makes involving the first term. The conclusion is valid, because, in any proposition, a term may be replaced by a second term, provided the second term is equivalent to the first.

Illustration. If 1 apple costs 3 cents, how much will 5 apples cost?

Major: "The cost of 5 apples" is 5 times "the cost of 1 apple."

Minor: "The cost of 1 apple" is "3 cents."

Conclusion: The cost of 5 apples is 5 times "3 cents."

It is customary to abbreviate the argument by the omission of one of the premises. In some localities, the major is omitted,

giving the form: Since the cost of 1 apple is 3 cents, the cost of 5 apples is 5 times 3 cents;" in others, the minor is omitted, giving the form: "Since the cost of 5 apples is 5 times the cost of 1 apple, the cost of 5 apples is 5 times 3 cents."

399. Algebra used in arithmetic.—The close relation between arithmetic and algebra is no longer a matter of doubt. Nearly all the modern text-books on arithmetic have introduced the elements of algebra. The rule and its limitations may be stated thus: Use algebra wherever its use will make the processes in arithmetic easier or clearer.

400. Tests of divisibility.—A number is divisible:

By 2, if it ends in 0, 2, 4, 6, 8.
By 3, if the sum of its digits is divisible by 3.
By 4, if the number represented by the two digits at the right is divisible by four.
By 5, if it ends in 0 or 5.
By 6, if divisible by 2 and by 3.
By 8, if the number represented by the three digits at the right is divisible by 8.
By 9, if the sum of its digits is divisible by 9.
By 10, if it ends in 0.
By 12, if it is divisible by 3 and by 4.
For 7 and 11, actual division is the best test.

401. Short processes and business methods.—Modern usage favors the introduction of short processes whenever they are of such a nature that the child can readily comprehend their practical value. For instance, in multiplying by 10 or any multiple of 10 the addition of the number of ciphers found in the multiplier is a direct way to the product; in dividing by 10 or any multiple of 10 pointing off to the left as many places as there are ciphers in the divisor; cancellation, factoring by inspection, the use of aliquot parts in common fractions and percentage and the contracted methods in interest and the other applications of percentage. Dr. Smith says that the teacher who fails to keep in touch with the demands and methods of

modern business is not doing her duty toward herself or the class. In regard to business methods considerable discussion has arisen about how much commercial arithmetic should be introduced in the regular courses. This question brings in the phases of commercial discussion which cannot be treated fully here but suffice it to say that the text-book in use in the school may serve as a guide in the limitations in this matter.

The following footnote, page 218 of Young's The Teaching of Mathematics, is a good presentation of the demands of business.

"An excellent idea of what the business world believes it has the right to expect from schools is given in Still's report to the N. E. A. 1900, digested from six hundred replies representing fifty-seven different occupations and lines of business.

Mechanical Aids;—

1. Importance of decimal point in business.
2. Necessity for legible figures.
3. Accuracy and speed.
4. Use of interest and discount tables and graded schedules.
5. Use of cash registers and arithmometers.
6. Fractions like $\frac{8}{9}$, $\frac{14}{17}$, $\frac{19}{23}$, etc., should receive scant attention.
7. Importance of "short cuts."
8. Value of teaching multiplication table through 20x20.
9. Importance of familiarity with English money.
10. Business forms, such as checks, notes, receipts, statements, and price lists should be understood by all pupils of the seventh year and upward.
11. Constant repetition and drill in the use of the four fundamental processes.
12. Processes of Solution. (In reply to question as to differences between processes of school work and outside world.) On the whole, no great

differences. (In interest, the only case, find interest and amount: facility in the four fundamental processes and approximate estimates important.)"

402. Simple interest.—This topic is introduced to direct attention to the terms used and to the methods used.

TERMS.

1. The sum of money on which interest is paid is the principal.
2. The per cent of the principal paid for the use of the principal for one year is the rate.
3. The money paid for the use of the principal for the entire time is the interest.
4. The interest added to the principal is the amount.

METHODS.

1. When the time is an exact number of years and months, find interest for one year and multiply this by the number of years.
2. Six per cent method.
3. Exact interest is interest obtained by considering 365 days as one year.

FAULTY ARRANGEMENT.

Avoid untrue statements like the following solution in finding the interest on $500 for four years at 6%.

$$\tfrac{6}{100}\times\$500=\$30\times4=\$120.$$

Arrange the work in two steps.

$$\$500\times\tfrac{6}{100}=\$30$$
$$\$30\times4=\$120 \text{ ans.}$$

403. Ratio.—Relation in arithmetic is ratio. Instead of waiting to reach this topic in the last part of arithmetic, it is advisable to use it all through arithmetic. Every analysis

that directs attention to comparative quantity uses ratio. Hence, the importance attached to unitary analysis, variable unit, common fractions and equations. See 405 and 406.

404. Problems illustrating progressive order of difficulties.—See 371 for scheme and types of examples. This section gives illustrative examples and problems that may be used to overcome difficulties in the order in which those difficulties arise.

SUBTRACTION.

1. 8—5. Inverse of addition.
2. 14—9. Inverse of addition; borrowing.
3. 24—9. Borrowing units.
4. 213—38. Borrowing units and tens.
5. 304—126. Zero and borrowing hundreds.

MULTIPLICATION.

1. 297×135. No zero used.
2. 297×130. Zero in the units column.
3. 297×103. Zero in the tens column.

DIVISION.

1. $786 \div 265$. No zero in divisor
2. $786 \div 205$. Zero in tens column.
3. $780 \div 250$. Zero in units column.

ADDITION AND SUBTRACTION OF FRACTIONS.

1. $\frac{6}{7}+\frac{2}{7}+\frac{1}{7}$
2. $\frac{6}{7}-\frac{2}{7}$ } Denominators the same.
3. $\frac{1}{4}+\frac{3}{8}+\frac{1}{2}$
4. $\frac{3}{8}-\frac{1}{4}$ } One denominator is common denominator.
5. $\frac{7}{8}+\frac{2}{3}+\frac{3}{5}$
6. $\frac{7}{8}-\frac{3}{5}$ } Miscellaneous denominators.
7. Bought $3\frac{1}{8}$ lbs. Ceylon tea, $2\frac{5}{8}$ lbs. of Japan tea and $5\frac{3}{8}$ lbs. Canton tea. How many lbs. in all?
8. A merchant bought $28\frac{1}{2}$ bu. potatoes. He bought $7\frac{1}{8}$ bu. from A, $13\frac{3}{4}$ bu. from B and the remainder from C. How many bu. did C sell?

9. Fred walked $12\frac{3}{7}$ miles, Luke $13\frac{7}{10}$ mi. and Walter $4\frac{2}{5}$ miles. How far did the three boys walk?

SUBTRACTION OF MIXED NUMBERS.

1. $12\frac{7}{8} - 5\frac{3}{8}$. Same denominators.
2. $12\frac{7}{8} - 5\frac{3}{4}$. 8=common denominator.
3. $12\frac{3}{8} - 5\frac{7}{8}$. Same denominators; borrowing.
4. $12\frac{3}{4} - 5\frac{7}{8}$. Different denominators; borrowing.
5. $12\frac{1}{21} - 5\frac{3}{11}$. Denominators difficult.

MULTIPLICATION OF FRACTIONS.

1. $\frac{3}{4}$ of \$16. Familiar operation.
2. $\frac{3}{4} \times 12$. Fraction by integer.
3. $12 \times \frac{3}{4}$. Integer by fraction.
4. $\frac{3}{4} \times \frac{7}{8}$. Fraction by fraction.
5. At $\$\frac{3}{5}$ a yard, what is cost of 75 yds.?
6. Find cost of 10 tons of coal at $\$6\frac{3}{4}$ a ton.
7. Find cost of $\frac{3}{8}$ can of molasses at $\$\frac{7}{8}$ a can.
8. If land is worth $\$40\frac{1}{2}$ an acre, what is the value of a farm of $12\frac{1}{4}$ acres?

DIVISION OF FRACTIONS.

1. $\frac{6}{7} \div 3$. Numerator divided.
2. $\frac{5}{7} \div 3$. Denominator multiplied.
3. $12 \div \frac{3}{4}$. See last case in 394.
4. $\frac{3}{4} \div \frac{1}{2}$.
5. $6\frac{1}{3} \div 2$.
6. $6\frac{1}{3} \div 2\frac{1}{2}$.
7. A woman exchanged 30 lbs. of butter at \$.25 per lb. for cloth costing $\$.37\frac{1}{2}$ a yard. How many yards did she get?

DIVISION OF DECIMALS.

Addition, subtraction and multiplication of decimals do not involve many difficulties. Following is an order for division :

1. 638.724÷12.
2. 63872 ÷.12.
3. 638.72 ÷.012.
4. At $5\frac{1}{2}$ cents per lb. how much sugar can be bought for $4.40 ?

PERCENTAGE.

See types in 371 and then consult any arithmetic. Students preparing for New York City should follow the order of difficulties as outlined in 371. Those types in fractions, decimals, etc., cover all difficulties.

405. Unitary analysis.—This kind of analysis goes back to one common unit of measure. The fixed unit *one* is the basis.

Illustration. Six books cost $9; find cost of eleven books at the same rate.

$9 =cost 6 books.
$9÷6=$1\frac{1}{2}$, cost of *one* book.
$1\frac{1}{2}\times 11=$16.50, cost of 11 books.

The other important method of solving problems is the *equation.*

406. Variable unit.—In contrast to the fixed unit *one*, we have the variable unit. When a convenient ratio exist between the two quantities in the problem, it is convenient to use that ratio instead of going back to the cost of *one.*

Illustration. Six books cost $9; find cost of thirty-six books.

$9=cost 6 books.
Ratio of 6 books to 36 books is 6.
Hence, $54=cost of 36 books.

The unit of comparison happens to be 6, but it might be any other number. Note that this device does not apply to the problem in 405; there is no integral ratio between 6 and 11.

407. Series.—Grube and others have used the series of combinations for abstract and concrete drill. Illustration of series in building number 7:

6+1=7	1+6=7	2+2+2+1=7
5+2=7	2+5=7	3+3+1=7
4+3=7	3+4=7	

408. Decimation.—A device for rapid drill based upon tens was frequently used for many years, but now some principals do not seem to approve it. The device is still helpful but it should not be abused. See 380.

409. Decomposition.—The analysis of numbers is an essential part of clearness in teaching the fundamental facts of addition, subtraction, multiplication and division. The local value of figures in the orders *units, tens and hundreds* is explained by decomposition. See 383 to 386 inclusive.

410. Other terms explained.

1. Additive subtraction. The process of finding what must be added to the subtrahend to produce the minuend is the method of additive subtraction. Advantages are (a) use of addition, (b) obviates use of subtraction tables, (c) lessens difficulties in "borrowing." See 384.
2. Arithmetical complement. The difference between any number and the next higher power of 10 is the arithmetical complement of that number.

   3 is the complement of 7, since $7+3=10$.
   32 is the complement of 68, since $68+32=100$.
   135 is the complement of 865, since $865+135=1000$.
   0.26 is the complement of 0.74, since $0.74+0.26=1$.

3. Association, commutation and distribution. These laws relate to arrangement and analysis of numbers.

   The law of association, applied to multiplication, says that the use of brackets makes no difference in the process

   $$5\times(6\times7)=(5\times6)\times7=210.$$

But the use of brackets in combined addition and subtraction does make a difference.

$5+6\times7=47$
$(5+6)\times7=77.$

The law of commutation says the product is the same independent of the order in which the numbers are multiplied.

$5\times6\times7=7\times6\times5=6\times7\times5.$

Likewise in addition.

$5+6+7=7+6+5=6+7+5.$

The law of distribution uses analysis by a kind of decomposition of numbers.

$5=2+3.$ Then
$4\times5=4\times2+4\times3=20.$

4. Elimination of subject-matter. The modern text-books are leaving out a large number of the topics treated in the older books. This view is looking to the practical value of what is learned in mathematics rather than to the disciplinary value of the study. Following are some of the subjects which are no longer considered necessary for children to master:

"1. G. C. D. or L. C. M. of large numbers otherwise than by factoring.
2. Fractions with large or unusual denominators.
3. Compound or complex fractions.
4. All measures not actually in use in the community at large.
5. Reductions of decimals to common fractions and decimals beyond thousandths.
6. Circulating decimals.
7. Square root and cube root except by factoring.
8. Profit and loss as a separate subject.
9. True discount

10. Partial payments.
11. Equation of payments.
12. Partnership.
13. Compound proportion.
14. Compound interest.
15. Business forms which do not conform to the usage of the day.
16. Large numbers and exercises involving many numbers.
17. The premature introduction of difficult matter."—Young, page 220.

5. Measurement and partition. "In measurement the divisor and dividend are of the same denomination, but in partition the divisor is abstract."—(McMurry, 199).

    18 ft.÷3 ft.=6. Measurement.
    18 ft.÷3=6 ft. Partition.

    "The distinction between division and partition has received far more attention than its importance warrants. No doubt there is a logical distinction between the questions: *How many 4's in 12?* and *If 12 be separated into 4 equal parts, how many units in each part?* And between: *If 5 yards of cloth cost 75 cents, what is the price per yard?* and *At 15 cents per yard how many yards can be bought for 75 cents?* But this distinction does not affect the mathematical process, nor need it be mentioned to the child. The essential thing for him to know is *what* the result will be (cents, yards, etc)." —Young, 235.

6. Problems. "Problems include all the examples in arithmetic in which the operations are not directly stated. They are divided into simple, involving only one operation, and complex, involving more than one operation.

The solution of these problems is always made through a form of reasoning called *traduction*." —(Bailey, p. 384, N. E. A. Report, 1905.) See 398.

7. Proof, verification or checking. The proof of correct solution may be answers in the book, the teacher's decision, a second solution in the same way or in another way. Verification of a few problems is worth more than the solution of many additional problems without verification or proof. Some kinds of proof have been mentioned. Here we add that of casting out 9's. This is useful but it fails to detect such errors as the addition of 9, the interchange of digits, and all errors not affecting the sum of the digits.

CASTING OUT 9'S TO CHECK ADDITION.

$$\begin{aligned}
56342 &= 9\times\ 6260 + \ 2 \text{ remainder} \\
64723 &= 9\times\ 7191 + \ 4 \text{ remainder} \\
57849 &= 9\times\ 6427 + \ 6 \text{ remainder} \\
23454 &= 9\times\ 2606 + \ 0 \text{ remainder} \\
\hline
202368 &= 9\times 22484 + 12 \text{ remainder} \\
&= 9\times 22484 + \ 9 + 3. \\
&= 9\times 22485 + \ 3.
\end{aligned}$$

The excess of 9's is 3; and the excess in the sum of the excesses 2, 4, 6 and 0, is 3; hence, the work is probably correct.

SUBTRACTION.

$$\begin{aligned}
845 &= 9\times 93 + 8 \text{ remainder.} \\
327 &= 9\times 36 + 3 \text{ remainder.} \\
\hline
518 &= 9\times 57 + 5 \text{ remainder.}
\end{aligned}$$

Remainders $5+3=8$; subtraction probably correct.

MULTIPLICATION.

$$\begin{aligned} 842 &= 9\times 93 + 5 \text{ remainder.} \\ 52 &= 9\times 5 + 7 \text{ remainder.} \end{aligned}$$

$$43784 = 9\times 4864 + 8 \text{ remainder.}$$

$5\times 7 = 35 = 9\times 3 + 8$. The excess of 9's in the product of the remainders or excesses is 8, the same as in the final product. Operation probably correct.

DIVISION.

$$74563 \div 428 = 174 + \tfrac{91}{428}$$

$$74563 = 428\times 174 + 91$$

Excess of 9's in dividend $=7$
Excess of 9's in divisor $=5$
Excess of 9's in quotient $=3$
Excess of 9's in remainder $=1$
Excess of 9's in $5\times 3+1$ $=7$

Operation probably correct.

8. Traduction. See 398.

Chapter XV. Reading.

411. Value.—Excellence in all other branches of school work is dependent upon ability to read well, and hence the basic importance of reading. But aside from its importance in the acquisition of knowledge in school, reading is a means of pleasure for ourselves and others during later life. Appreciative reading of good literature gives strength and refinement to character, and assures continued development of intellectual power through the use of the mental faculties.

412. Characteristics of books recently used.

1. Graded words and exercises without attention to content.
2. Moral stories.
3. Information readers.
4. Patriotic selections.
5. Literary masterpieces.

413. Types of reading matter used at present.

1. Nonsense rhymes, such as Mother Goose. Reasons in favor—play in education, pleasure, interest; against—content lacking.
2. Literature of familiar things, such as toys, games, food, domestic animals.
3. Stories of primitive life of the race, early civilization, animal life, concrete heroism, Homer, Indian life, etc. Apply culture epoch theory.
4. Fairy stories. Imagination sees the good and the beautiful. Should stories be condemned because the true is lacking? No.
5. Fables. Literary inheritance.
6. Myths. The story in education.
7. Bible stories.
8. Poetry.

9. Geographical readers and other forms of literature.

414. Principles determining the selection of reading matter.—The twofold relations of the individual and the community are factors for constant consideration. The mental requirements of the individual must be satisfied; the sociological or community interests must not be neglected. Hence, the two determining principles in the selection of reading matter are the psychological and the sociological needs. Such needs require

1. Material simple in thought and form.
2. Familiar words.
3. Suitable content.
4. Adaptability to individuals.

415. Analytic methods of teaching primary reading: word, sentence.—The word method in reading teaches a large number of words as wholes by associating the words with familiar things. The words are recognized at sight without knowing the spelling. Pupils have ideas when they enter school; they know many objects; they use many words; and so this method aims to teach pupils to recognize the words which are used in familiar language.

The advantages claimed:

1. The word is mastered by the eye.
2. It is from the known to the related unknown, as children can *talk words* when they enter school, and now they learn that the word is a picture and also a sign of some objective thing.
3. Alphabet, spelling and syllables are learned incidentally.
4. It is natural because languages are developed one word at a time, the word being the unit of language.

Disadvantages of the word method:

1. Mastery by the eye alone is not a pedagogical advantage; multiple sense instruction is better.

2. Habit of guessing.
3. Incomplete without phonics, spelling, and writing sentences.
4. Considering the sentence as the unit of expression, the word method violates the principle *from the whole to its parts.*

The sentence method begins with sentences and later works down to words and letters.

Advantages:

1. The sentence is the unit of our language, since every complete thought must have a sentence for its expression.
2. Interest, apperception and self-activity used in constructing and interpreting sentences.

Disadvantages of the sentence method:

1. Incomplete without the study of words, letters and phonics.
2. Not suited to simultaneous teaching where dull pupils are present.

416. Synthetic methods: alphabet, phonic.—The alphabet method teaches the letters first. Sooner or later the letters must be learned as they are instruments of knowledge in the child's mental equipment. It is, then, an advantage to learn them as soon as possible. But usage does not favor this method because (a) it violates the principle of going from wholes to parts; (b) it is neither the interesting nor the natural way of learning a language.

The phonic method, or the learning of the sounds of the letters, should not be used first. Reasons: the two given against alphabet method and also the fact that some letters have too many sounds and some letters are silent. As a supplementary aid, the values of phonic training are (1) distinct articulation; (2) pure tone; (3) the power to read new words and pronounce them correctly.

417. Combination method.—A liberal view of teaching primary reading includes the best features of the four methods mentioned. Analysis and synthesis are needed for every complete educational process, and enough of each can be chosen from the combined advantages of the four methods. Then add writing to co-ordinate the motor activity with the other senses; and, finally, dramatic expression as a means of interpretation through the aid of action.

DRAMATIZATION.

The value of dramatic expression is a modern contribution to primary reading. It need not be limited to primary reading, however, nor should it be. We have frequently emphasized the worth of oral expression in recitations, declamations, discussions and debates. Here we add one more suggestion in regard to using the dramatic instinct of children in all grades as a means of individual and social interpretation, expression and impression.

In the N. E. A. Report for 1907, p. 485, there is a short article on Dramatizing by T. C. Blaisdell, Professor of English Literature, State College, Lansing, Michigan. We quote three paragraphs and some of his suggestions.

"But why should not dramatizing be a potent factor in education? Children have an imagination far more vivid than have youths or adults. Left to themselves, unhampered by teachers and curriculum, children unconsciously become actors of power and dramatists of real human interest.

To illustrate: A few days ago I attended the out-of-door flag-day celebration of a two-room rural school. The program had been left to a committee of five girls. They had of course the conventional recitations and songs, a violin solo, choruses, etc.

But finally came an announcement that caused an expectant rustle among the fifty or sixty children and the few visitors sitting on the sloping hillside. Charades were announced, and we were to "guess." They were not charades, however ;

they were effective little dramas, conceived entirely by the girls, without rehearsals, and so far as I could learn, without any schoolroom experience in dramatizing. The Betsy Ross home during the making of the first flag was shown, the conversation between General Washington and his aides, and the famous flag maker, being given with a vividness that caused silence even among the boys of the somewhat restless audience. But the chief work of art was yet to come. Our young friend Malcolm was seen mounting his pony. He and his pony are a unit. And when he came crashing thru the trees and in front of the audience crying "The British are coming! Be ready! Be ready!" he brought his audience to their feet. They cried out in their excitement, "Paul Revere! Paul Revere!" The dramatizing was done with vigor, and was received with a delight that does not pass. Will not Malcolm read of the famous ride of Paul Revere with a new power when next that poem is called for in the reading-class? And will not every boy and girl who saw the little play, have a deeper understanding of the real meaning of the original ride and read of it with added joy and with more dramatic skill?"

Suggestions in favor of dramatizing.

1. Children are eager to interpret life; hence, the desire to play stories, poems, songs, and home or vacation incidents.
2. Visualization. Pupils comprehend better after seeing; they become better readers and better appreciators of literature.
3. Overcomes self-consciousness. The enthusiasm is a powerful social stimulus.
4. Clearer images formed. Better talking and writing.
5. Strengthens the speaking voice, gives ease of bodily carriage, increases desire for knowledge, brings teacher and pupils into closer

relations, and exalts the function of pleasure as a factor in education.

6. For reference, see Sara Cone Bryant's How to Tell Stories to Children ; also, the books cited in 418.

418. McCloskey method.—This method of teaching reading combines the advantages of the four methods discussed in the preceding sections and also correlates reading and language. Special emphasis is placed upon the content of the reading matter. Some of the leading features are summarized.

1. The choice of matter that appeals directly to the interests of the pupils. Live objects are selected, such as, the story of the Kid, from the Jewish Talmud ; The Ox; The Little Red Hen ; The Little Pine Tree ; The Little Boy Blue.

2. The vivid telling of stories by the teacher. The oral treatment of the story is the first step in the teaching. The story is told three times : first, to give an idea of the whole ; second, to give the children a chance to fix the essentials in their right order ; third, a rapid telling to bring all the parts together again. For suggestions for oral work with stories, see DeGarmo's "Essentials of Method", pages 94-107; McMurry's "Method of the Recitation", pages 26-29; McMurry's "Special Method in Primary Reading", pages 1-46.

3. The use of script forms in introducing the thought expressed in a sentence. This process combines the sentence method and the word method.

4. The transition from script to print. This puts the child into the use of text-book or printed

sheets early in his school career. It gives him a chance to begin to help himself.

5. Oral language lessons based upon the written and printed sentences already treated. A reproduction of the material already covered gives the teacher an opportunity to make use of the dramatic instinct in the children. This dramatic rendering of the little stories is not strictly a part of the McCloskey method but it is used successfully by a large number of teachers who are using the other points of advantage in the McCloskey method. The written language work follows closely after the first oral language work and absolute accuracy in getting capitalization and punctuation is required from every pupil. The progress in the line of structural composition is one of the marvelous results of this method of teaching.
6. Introduction of phonic lessons. After fifty or sixty words are thoroughly known at sight, the pupils are able to grasp the words as wholes and then the work in phonic analysis is introduced. The method of phonograms and blending is used.
7. The letters of the alphabet learned and used. This summary of features shows that the McCloskey method does use the sentence method, the word method, the phonic method and the alphabet method but they are used in the reverse order from that advocated in some schools. The principle from the whole to the parts is rigidly observed in this method.

419. Rational or Ward method.—This method is a combination of the word method and the phonic method. Later the

other two methods are utilized in the reading lesson. The aim of the Ward method of teaching reading is to make the child independent. The phonic drill during the first two years of the work aims to give the child a key to the language so that he will be able to help himself in all the work in reading after the second and third years.

The oral work in the Ward method is divided into three distinct lines of drill.

1. Sight reading from the blackboard.
2. Drill on phonograms.
3. Drill on blend.

In the first half year of school the children are taught to read eighty-two words by sight reading and in every instance the teacher must see that the children understand what they are reading. In teaching a word the actual process of teaching is not done until after the children have been tested to see that they have the general thought conveyed by that word. These words are used in sentences from the very beginning and are frequently drilled upon in conversation or story. Along with this sight reading there is much drill upon phonograms and the blend.

The leading features of this system are the following:

1. The presentation of phonograms in a rational order. A phonogram is a written or printed representation of a sound; as, f, l, m, n, r, ing, ings, ight, ights. A word phonogram is a sight word used as a phonogram; as, ail, at, old.
2. The teaching of an initial stock of phonograms before any phonetic reading is done.
3. Thorough training in phonetic blending before any reading is done. This training aims to prepare the sense of hearing for quick, accurate perception.

4. Gradual introduction of phonetic words into the sentences used in the reading lessons. A sight word is a word that has been taught as a whole. Such words are recognized by the sight alone. A phonetic word is a word that the children are to read by means of combining the phonograms. The blend or blending is the union of simple or combined sounds into words.

420. Guiding principle today.—The one great principle that determines correct methods of teaching reading is *from the whole to its parts*. This principle is applied all through the elementary grades.

421. Suggestions for beginners.—Suggestions 1 and 2 are from Course of Study.

1. "Sounds of letters. While the word or other sight method is being employed for teaching the reading of sentences, daily lessons should be given on the sounds of single letters and combinations of letters. These exercises should be used as a drill in articulation and as a preparation for reading. The first sounds taught should be such as are (1) easily made, (2) easily prolonged without alteration in character, and (3) common to many words in the vocabulary of the child: for example, s, m, l, f, a, e, o. The combinations should be such as are (1) easily learned as wholes, and (2) useful for reading; for example, ing, ight. Letters, the sounds of which have been taught, should be combined with words taught as wholes to form new words; for example, f combined with at, in, ill.

2. As a preparation for the recognition and pronunciation of new words, the teacher should slowly sound words which the pupils will

recognize by ear. Words taught by the phonic method should be introduced into the sentence reading very gradually so that the expression may not suffer. The use of diacritical marks as a help to reading is optional."

3. Use initial stock of ideas in pupils' minds. Choose an interesting subject, preferably an animal or other living thing. Use conversation leading to expression in simple sentences.
4. Script. Teacher writes a sentence on board, drills on it and on each word. Other sentences repeating certain words of first sentence.
5. Phonics. Easy elementary sounds, phonograms and blending.
6. Drill. Keep lists of phonograms and words for frequent drill.
7. Print. Early transition from script to the print in the book. Neither teachers nor pupils print.
8. Visualization and imitation. Teacher writes slowly on board, pronouncing each letter and each word. Pupils observe to get visual and motor images. Then as teacher counts or directs, each pupil may reproduce the writing in the air; this followed by writing on paper or board. Use pencil or crayon.

422. Good reading defined.—Interpretation of the author is good reading. The analysis of this definition will show that it covers all of the mental and the physical qualifications of good reading. The physical qualities are articulation, enunciation, pronunciation, pitch, modulation, time, accent, and inflection. The general position of the body and the holding of the book contribute much to these qualities. The mental qualities are the results of an application of the physical qualities so that the selection may be properly expressed. This *interpretation expressed* involves emphasis, placing of rhetorical pauses, fluency, and feeling.

423. Physical difficulties.

1. Distinct articulation and enunciation. Appeal to imitative faculty of child, the teacher being the model; have individual and class drills on difficult sounds and combinations like th in with, t in first, r in frog, k in sink.
2. Modulation of voice. Work for pure speaking tones, the teacher being the model again.
3. Weak attention. Have short, interesting lessons, and stop before interest wanes. Physical conditions often determine the duration of sustained interest. Timidity, bashfulness and laziness should also be considered as causes.

424. Mental difficulties.

1. Association. Reading calls for a threefold effort: the idea in the mind, the spoken words, and the symbols representing these words. This association requires time, as required by DeGarmo's Law of Successive Clearness.
2. Intelligence. Strive to get intelligent reading, not a mere pronunciation of words. See the term critical reading in 430.

425. Reading to pupils.—According to the course of study the teacher's aim should be (1) to develop an interest in reading; (2) to cultivate the imagination; (3) to present a model of expression; (4) to create ideals of right living. As the pupils advance in the grades the teacher's reading to them is not for the purpose of direct imitation by the pupils but to increase interest and maintain a standard of good reading.

426. Meaning of words.—The meaning of words should be learned through the context rather than from formal definitions. For various ways of teaching the meaning, see 147, 173 and 500.

427. Aim of phonic training.—See phonic method in 416.

428. How to arouse interest.

1. Beginning in 2B, "the reading lessons proper should be preceded by (1) such conversations as may be necessary to prepare the minds of the pupils for the appreciation of the subject matter, and (2) exercises which will insure the prompt recognition of the form and the meaning of new words." Which of the Formal Steps of Instruction are used here? Silent reading preparatory to oral reading is also recommended in this grade.
2. Dictionary.—In 4A "the use of diacritical marks as aids in the pronunciation of difficult words, and in the intelligent use of the dictionary, is recommended."
3. In 6A teachers should give informal talks on books to read at home, being guided in recommendations by tastes and interests of the individual pupils.
4. In 6B the power of sustained interest is cultivated by reading long selections or complete works. Have one rapid reading to get conception of the piece of literature as a whole; part of the reading may be done by teacher, part by pupils in class, and part by the pupils at home. A second reading should clear away the difficulties in meanings, and pupils should try to get the thought and feeling rather than the form of the selection.
5. Oral report on home reading and current topics is recommended in 7A.

429. Complete works vs. selections.

"Another reform of great consequence has taken place during the past fifteen years in the teaching of reading. The

movement had its origin in the conviction on the part of President Eliot and others that reading was too formal ; that reading is but a means and not an end, and that so soon as the mechanical elements are mastered it should be used as a vehicle to transmit the contents of literature to the child. This reform, which was greatly assisted by the discussions and reports of the "Committee of Ten" and the "Committee of Fifteen," has revolutionized the school readers and the courses of study throughout the length and breadth of the land. Courses of study in the elementary school now demand, in the upper grades, the critical and appreciative study of masterpieces of literature, and the school readers are no longer made up of "useful information" and twaddle on moral subjects invented by the compilers of readers. But they contain, even in the lowest numbers, pieces that possess genuine literary merit. So that instead of reading about "Jane's Doll" and "Jack's Top," the boys and girls of the second and third grades read the poems of Longfellow, Field and Cary.

In the secondary and collegiate courses similar changes have occurred. Formerly, courses in literature consisted largely of the mastery of treatises about literature and its creators. Now they consist of the concrete, first-hand study of entire masterpieces representing authors or types of literary form.

The changes may be summed up by saying that the courses in English have been infinitely enriched by placing the emphasis on the subject-matter of literature rather than on the mere form of mechanical aspect."—From approved answers, p. 170, McEvoy's Science of Education.

430. Critical reading.—The appreciative study of complete masterpieces, as suggested in 429, is made by going over the masterpiece three times. To distinguish this process from one hurried reading, the name critical reading has been applied.

First reading for general conception; some portions read by teacher for the purpose of creating a right atmosphere; other

portions read aloud by pupils in class; minor portions read by pupils at home.

Second reading for the more careful treatment of important parts. The aim being to bring about an appreciation of the beauty of the selection rather than to accumulate a fund of information concerning words or allusions.

Third reading for effective oral rendering of those parts of the selection which make special appeals to the pupils' imaginations and sympathies.

431. Silent reading. A large part of the work of school and of life depends upon the power of reading silently. As all good reading means an interpretation of thought, it follows that the teacher's duty is to show pupils how to get the thought from the printed page through the process of silent reading. This may naturally follow the ability to do good work in oral reading, but special exercises to test the children upon the work in the reading lesson and in the library books is recommended. See 3 and 5 under 428.

432. Difficulties in the selection.—See 173 and 490.

433. Articulation violated.—Articulation has reference to the distinct utterance of the sounds of the letters and syllables constituting a word. This distinct enunciation is violated in four different ways.

1. Suppression of a syllable; as, ev'ry for every, reg'lar for regular, and mem'ry for memory.
2. The omission of sounds; as, readin for reading, swif'ly for swiftly, and Feb'uary for February.
3. The substitution of sounds; as, ufford for afford, judgmunt for judgment, modist for modest.
4. Blending of the termination of one word with the beginning of another; as, this sworld for this world.

434. Accent and emphasis.—Accent is the stress of voice placed upon a syllable; emphasis is the stress of voice placed upon one or more words in a sentence. The difference in ac-

cent is illustrated by the nouns and verbs alike excepting the accent. Thus: conduct, meaning behavior, is accented on the first syllable; while, conduct, to lead, is accented on the second syllable.

Emphasis is frequently denoted in books by the use of italics, small capitals, or large capitals. But these indications are not always used, and so the interpretation of the piece to be read requires the student to place the emphasis so that the meaning of the author will be properly expressed. An illustration from the Union Fifth Reader by Sanders is this sentence from Webster: "LIBERTY *and* UNION, NOW *and* FOREVER, ONE *and* INSEPARABLE." Or this one: *Treason!* cried the speaker; *treason*, TREASON, TREASON, reechoed from every part of the house.

Absolute emphasis is the kind just illustrated. It belongs to the important words in a sentence, irrespective of contrasting emphasis. Antithetic emphasis depends upon contrasting parts of a sentence.

"People do not lack *strength;* they lack *will.*"

435. Inflection.—The word inflection means a rising or a falling of the voice in reading or speaking. The four kinds of tones classified under inflection are the monotone, the rising inflection, the falling inflection, and the circumflex. Strictly speaking, the monotone is not an inflection at all because there is no rising or falling but for convenience it is classified with the other three kinds of tones. Following is an illustration for each kind of tone.

1. Monotone. "Thy will be done."
2. Rising inflection.

The noisy geese that gabbled o'er the pool,
The playful children just let loose from school;
The watch-dog's voice that bayed the whispering wind,
And the loud laugh that spoke the vacant mind;
These all in sweet confusion sought the shade,
And filled each pause the nightingale had made.

In these lines from the Deserted Village, use rising inflection on *pool*, *school*, *wind;* falling on *shade* and *made*.

3. Falling inflection.

Brutus. Go to; you are not, Cassius.

Cassius. I am.

Brutus. I say you are not.

Cassius. Urge me no more; I shall forget myself. Have mind upon your health; tempt me no further.—From Julius Cæsar.

Falling inflection on *to*, *not*, *Cassius*, *am*, *not*, *more*, *myself*, *health*, *further*.

4. Circumflex for underscored words.

And this man has become a *god*, and Cassius a *wretched* creature.

436. Modulation: pitch, quantity, quality.—Modulation has reference to the variations in the voice in speaking and reading. Modulation is both mental and physical and it depends upon the emotional interpretation of the selection to be read.

Modulation is expressed in three different ways. Pitch has reference to the high or low tones of the voice; quantity means the volume or the loudness of the tones; quality has reference to the kind of tone. Pitch is easily distinguished by associating it with the musical scale. Quantity is measured by the volume of the sound as soft or loud; and by the time as slow or quick. Volume has reference to the stress; time has reference to the movement. Illustrations of the principal characteristics under quantity are given below. Number (1) is high and loud; (2) very loud; (3) quick; (4) soft; (5) very loud; (6) plaintive; (7) and (8) slow and low. Selection and application taken from page 44, Union Fourth Reader by Sanders.

(1) The combat deepens! (2) ON! YE BRAVE!
(3) Who rush to glory, (4) or the GRAVE!
(5) WAVE, *Munich*, all thy banners WAVE!
And CHARGE with all thy CHIVALRY!

(6) Ah! few shall part where many meet!
The snow shall be their winding sheet,
And every turf beneath their feet
(7) (8) Shall be a soldier's sepulcher!
—Campbell.

Quality relates to the kind of tone. Under ordinary classifications there are the four kinds. Sanders, an authority followed by nearly all the modern books, gives four definitions which we shall quote.

"1. The pure tone is a clear, smooth, sonorous flow of sound, usually accompanied with the middle pitch of voice, and is adapted to express emotions of joy, cheerfulness, love, and tranquility.

EXAMPLE.

Hail! beauteous stranger of the wood,
Attendant on the spring,
Now heaven repairs thy vernal seat,
And woods thy welcome sing.

2. The orotund is a full, deep, round, and pure tone of voice, peculiarly adapted in expressing sublime and pathetic emotions.

EXAMPLE.

Its thunders! Sons of dust, in reverence bow!
Ancients of Days! Thou speakest from above:
Almighty! trembling, like a timid child,
I hear thy awful voice. Alarmed—afraid—
I see the flashes of thy lightning wild,
And in the very grave would hide my head.

3. The aspirated tone of voice is not a pure, vocal sound, but rather a forcible breathing utterance, and is used to express amazement, fear, terror, anger, revenge, remorse, and fervent emotions.

EXAMPLE.

Oh, coward conscience, how dost thou affright me!
The lights burn blue. It is now dead midnight;
Cold, fearful drops stand on my trembling flesh.

4. The guttural quality is a deep, aspirated tone of voice, used to express aversion, hatred, loathing, and contempt.

EXAMPLE.

Tell me I hate the bowl?
Hate is a feeble word:
I loathe, ABHOR, my very soul
With strong disgust is stirred,
Whene'er I see, or hear, or tell,
Of the dark beverage of hell."

437. Pauses: grammatical, rhetorical.—Rhetorical pauses are those made in reading, irrespective of the construction or the punctuation of the passage. Grammatical pauses are those made in accordance with the construction and the punctuation of the passage. The former is illustrated:

Sweet was the sound | when oft at evening's close |
Up yonder hill | the village murmur rose. |

438. Control of the breath.—As in all other school work there are two conditions to be considered, the physical and the mental. We have already spoken about the necessity of good physical conditions in each child and the consequent mental conditions. Good breathing requires proper position in sitting and standing. It involves practice in deep breathing and the general poise of mind and body. The child that is taught to breathe deeply will soon form the habit of breathing in that way most of the time. When he comes to the practice in oral reading, the breathing will then take care of itself and his attention can be given to the mental qualities of good reading,

while the breathing will supplement his interpretation by means of the oral expression. The ordinary "setting up" exercises in physical culture are intended to put the body into physical conditions for effective breathing in all school work.

439. Extensive and intensive reading.—Extensive reading refers to the amount of reading done by the pupil; while intensive reading relates to the depth of the interpretation made. The present tendency is toward extensive reading. Stanley Hall and some other educators advocate the mastery of one good book in literature rather than the promiscuous reading of books. The latter may seem to satisfy the desires and views of the child, but there will be a lack of classified material or an utter forgetfulness of the matter read. Intensive reading of a few good books will enable the pupil to get the thought of the author, to become familiar with the author's style of writing, and to form ideals worthy of imitation. There are arguments in favor of each kind of reading, but a personal opinion favors the latter kind.

440. Home reading.—The following paragraphs are taken from the New York City course of study regarding the use of library books:

The class library is designed to supplement school work and to furnish the teacher with such material as will attract the children to books, create a love for good literature, and encourage the habit of reading outside of school hours. A good rule to be followed in the selection of books is the one laid down by Dr. Hill in "The True Order of Studies": "The most instructive reading for a person of any age, old or young, is that in which the author's tone of thought is above the average tone of the reader's thought, and yet not beyond his grasp."

The pupils should have convenient access to the library for reference work and general reading. They should be encouraged to draw books and take them home. Books should be kept not longer than two weeks without renewal; and such

books as are in great demand should not be retained by a pupil more than one week.

441. Literature and character.—In Chapter IV we quoted from the New York Course of Study regarding moral education. The matter quoted emphasized the use of literature as an aid in the formation of character. This view needs no defense. The topic is inserted here to emphasize the need of more direction regarding what children shall read. The teacher of ordinary reading is supposed to give the child the power to interpret good literature but her task does not end with that part of the work; she must supplement those efforts in teaching by trying to direct the child into habits of reading a kind of literature that will form character for life.

442. Memory gems.—To what extent should pupils be required to memorize gems from literature? What should be the characteristics of such memory selections?

A minimum assignment should be prescribed for every grade in the elementary school. The selections are intended to aid pupils in thought and expression rather than to serve as mere training for the memory. Each selection has the merit (a) of being adapted to the grade, (b) of teaching some desirable lesson, (c) of posessing literary excellence.

NEW YORK CITY SUGGESTIONS.

1A.

At least four lines of poetry per week, or an equivalent amount of prose, should be memorized by every pupil. The selections may be made from the following list:

Little Pussy.—Taylor.
The Dewdrop.—Sherman.
Who has Seen the Wind?—Rossetti.
Sleep, Baby, Sleep (two stanzas).—From the German.
The Rain is Raining All Around.—Stevenson.
The Wind.—Stevenson.
Boats Sail on the Rivers.—Rosetti.

Mother Goose Rhymes:

Humpty Dumpty, Little Bo-Peep,
Mistress Mary, Little Boy Blue,
Little Jack Horner, Baa, Baa, Black Sheep,
Rockaby, Baby, Thy Cradle is Green,
Rockaby, Baby, on the Tree Top,
This Little Pig Went to Market, etc.

1B.

The Sunbeams.—Poulsson.
Over in the Meadow.—Wadsworth.
Hush! the Waves are Rolling in.—Old Gaelic Lullaby.
What Does Little Birdie Say?—Tennyson.
The Baby.—MacDonald.
The Golden Rule.—New England Primer.
Robin Redbreast.—Allingham.
Twinkle, Twinkle, Little Star.—Taylor.
Nonsense Alphabet.—Lear.

Mother Goose Jingles:

Sing a Song of Sixpence. As I Went Through the
I Saw a Ship a-Sailing. Garden Gap, etc.
I Had a Little Sister. Thirty White Horses.
Peter Piper. Little Nancy Etticoat.
The House That Jack Built.

2A.

The Swing.—Stevenson.
Bed in Summer.—Stevenson.
Who Stole the Bird's Nest?—Child.
Daisies.—Sherman.
Seven Times One.—Ingelow.
The Rock-a-By Lady.—Field.
All Things Beautiful.—Alexander.
Proverbs and Maxims.

2B.

Don't Kill the Birds.—Colesworthy.
Ariel's Song, "Where the bee sucks."—Shakspere.
My Shadow.—Stevenson.
Dutch Lullaby.—Field.
Windy Nights.—Stevenson.
Lady Moon.—Houghton.
Stop, Stop, Pretty Water.—Follen.
The Land of Story Books.—Stevenson.
Thanksgiving Day.—Child.
Proverbs and Maxims.

3A.

I Live for Those Who Love Me.—Anon.
The Brown Thrush.—Larcom.
The Tree.—Bjornsen.
Wishing.—Allingham.
The Owl and the Pussy Cat.—Lear.
The Violet.—Jane Taylor.
Hiawatha's Childhood.—Longfellow.
Hiawatha's Sailing.—Longfellow.
Proverbs and Maxims.

3B.

The Child's World.—Lilliput Lectures.
Marjorie's Almanac.—Aldrich.
A Visit from St. Nicholas.—Moore.
The Owl.—Tennyson.
The Captain's Daughter.—Field.
Sweet and Low.—Tennyson.
Proverbs and Maxims.

4A.

The Night Wind.—Field.
The Children's Hour.—Longfellow.
Jack Frost.—Gould.

Robert of Lincoln.—Bryant.
"He Prayeth Best."—Coleridge.
The Wreck of the Hesperus.—Longfellow.

4B.

The Fountain.—Lowell.
September.—Jackson.
The Village Blacksmith.—Longfellow.
The Mountain and the Squirrel.—Emerson.
Barefoot Boy.—Whittier.
Drill exercises, as in 4A.

5A.

The Landing of the Pilgrims.—Hemans.
The Day Is Done.—Longfellow.
"Under the Greenwood Tree."—Shakspere.
A Sea Dirge.—Shakspere.
Woodman, Spare That Tree.—Morris.
The Gladness of Nature.—Bryant.
Excelsior.—Longfellow.
The Arrow and the Song.—Longfellow.

5B.

The World Wants Men.—Anon.
Aladdin.—Lowell.
Psalm of Life.—Longfellow.
To the Fringed Gentian.—Bryant.
The Planting of the Apple-Tree.—Bryant.
Paul Revere's Ride.—Longfellow.
Barbara Frietchie.—Whittier.
Today.—Carlyle.

6A.

Orpheus with His Lute.—Shakspere.
The Destruction of Sennacherib.—Byron.
A Man's a Man for A' That.—Burns.
The Minstrel Boy.—Moore.

Abou Ben Adhem.—Hunt.
The First Snow-Fall.—Lowell.
Nobility.—Cary.
Sheridan's Ride.—Read.
Song of Marion's Men.—Bryant.

6B.

The Spacious Firmament.—Addison.
Burial of Sir John Moore.—Wolfe.
The Builders.—Longfellow.
Old Ironsides.—Holmes.
One by One.—Proctor.
"Breathe's There the Man."—Scott.
The Blue and the Gray.—Finch.
The White-Footed Deer.—Bryant.

7A.

Fiftieth Birthday of Agassiz.—Longfellow.
To a Waterfowl.—Bryant.
The Finding of the Lyre.—Lowell.
The Year's at the Spring.—Browning.
"It is not growing like a tree "—Jonson.
Daybreak.—Longfellow.
Bannockburn.—Burns.

7B.

Thanatopsis.—Bryant.
Charge of the Light Brigade.—Tennyson.
Hohenlinden.—Campbell.
"Good name in man or woman."—Shakspere.
"Farewell, a long farewell to all my greatness."—Shakspere.
The Bugle Song.—Tennyson.
"There was a sound of revelry."—Byron.

8A.

"Thou, too, sail on."—Longfellow.
"The quality of mercy."—Shakspere.

The Chambered Nautilus.—Holmes.
My Heart Leaps Up.—Wordsworth.
The Brook.—Tennyson.
Sound the Loud Timbrel.—Moore.
"I wandered lonely."—Wordsworth.
The Concord Hymn.—Emerson.
Opportunity.—Sill.
Warren's Address.—Pierpont.
Bunker Hill Oration.—Webster.
Polonius's Advice.—Shakspere.

8B.

Liberty and Union.—Webster.
To a Skylark.—Shelley.
Elegy.—Gray.
The Forest Hymn.—Bryant.
Commemoration Ode (Division VI.)—Lowell.
On His Blindness.—Milton.
The Way to Heaven.—Holland.
Sandalphon.—Longfellow.
"This was the noblest Roman of them all."—Shakspere.
Gettysburg Address.—Lincoln.
"What is so rare as a day in June."—Lowell.

443. Patriotic selections.—There are two views regarding the teaching of patriotism. One mentions specific virtues in civic life and then proceeds to teach the necessity of having these virtues. This teaching is done largely through biography and history. The tendency toward imitation of the lives of great men and women is the principle upon which this kind of training rests. The other view is through the self-activity of the pupils in organizations for pupil self-government and in the supplementary reading of chosen selections which convey the highest ideals in American life. The latter process is the one that justifies the use of patriotic material in the course

for reading. Such material exalts civic virtues, which are treated abstractly in the first view of patriotic training, but the teacher does not preach the necessity of following every one of these virtues. She hopes, however, to have the pupil, through the interpretation of the literature, recognize the ideals and feel it a duty and a pleasure to strive to attain such standards.

444. Biography.—In the chapter on history we spoke of biography as a correlated means of making historic events emphatic. A similar use may be found in reading. The selections in literature will have a stronger personal relation as the child becomes acquainted with the lives and characteristics of the author. This point of view alone justifies the use of a certain amount of biography as a part of the suitable material in the course in reading.

445. How to memorize a selection.—The following suggestions are the outgrowth of personal experience.

1. Choose a selection that will appeal to the interests of the class. It may be necessary to educate the children to appreciate certain kinds of prose or poetry. In this process of education teachers should select material that will suit the children during the various steps in their development.
2. Use a selection that may be found in the books of the class so that each child may have a copy for his own use. If this is not possible, write the whole selection on the board so that it may be easily seen from any part of the room.
3. Bring out the essential facts in the biography of the author.
4. Show the conditions which led to the writing of the selection.

5. Don't make a long introduction in trying to arouse interest. Make the teaching of the selection a matter of business which every child in class ought to respect. The very fact that the selection has been chosen for this purpose is enough to invite respectful attention; and the facts brought out in the biography and in the conditions at the time of writing the selection are enough to interest an average class.

6. Have the pupils take a comfortable position, fix attention upon the matter on the board and prepare themselves for concert work.

7. The teacher should direct the lesson by having all pupils read the whole selection through once. Then take it by stanzas or paragraphs, and then the third time begin upon the sentences. Concert memorizing of a certain amount of the selection is made by means of visualization. Concert and individual drill follows.

8. Review frequently from the beginning so that pupils may hold the parts in their relation to the whole. Do not prolong the work to the point of fatigue. Grade selection according to the ability of the class to memorize, and stop when the complete selection is mastered. The completion of the process may be assigned for home work.

446. Rhetorical exercises.—The practice of having rhetorical exercises, from time to time, is to be commended as a useful exercise in school work. Those who have read the substance of this book do not need an extensive answer to this question. Such exercises are a kind of oral summary of the leading

points in all the lessons; but as a means of bringing out the dramatic element in expression they have a far greater value. From what has been said about class discussions, debates, etc., students can summarize the points of value in rhetorical exercises.

447. Adaptation.—We have emphasized the necessity of adaptation all through the grades in the elementary schools and so that general principle can be applied to every exercise in the course in reading.

448. Variety.—The law of variety is a physical and a mental necessity. It is the one valuable point in the avoidance of fatigue. As the reading matter is one external means of adapting variety, it is not necessary to offer a longer defense of its use.

449. Correlation.—Since reading is necessary as a basis for all studies, it follows that reading must be correlated with all studies. It is not necessary, however, to make the recitation periods in reading lose their character as such in the effort to cover the work in geography, grammar, arithmetic, or other studies.

450. Habit.—For one point of view see section 441, and then apply that thought to the material in Chapter IV.

Chapter XVI. Examination Department. Typical Questions and Answers.

451. Association of ideas.—*Explain association of ideas.*

Association means the relation of ideas, of images, of feelings, etc., because of similarity or of contiguity. One thing is like another. That thing recalled to consciousness recalls the other without effort. One thing is the result of another that we learned at same time or in same place. We recall one, we recall the other.

A child has been taught spelling by the method of visualization. The name Florida recalls to his mind not only his mental conception of the state of Florida but likewise the image of the word Florida as it appeared when written on a blackboard. He associates the image of the written form with the spoken word. Likewise he associates all concepts in consciousness related to Florida. We remember by association. In history when teaching the early explorations, have the date of the founding of St. Augustine learned. Later we study the founding of the oldest settlement of the south-west, Santa Fe. Instead of learning this date we associate it with St. Augustine and thus form a stronger link in memory for the first date. Santa Fe was founded seventeen years later. James says verbal memory is strong only in young children. The older one grows, the weaker it becomes. It behooves us, therefore, to form the habit of remembering by association.

Correlation is founded upon the idea of association of knowledge. The concentration idea of the Herbartians, which is a form of correlation, is likewise founded upon the great idea of teaching by means of associating knowledge.

452. Observation: cultivation of power of.

(*a*) *What is meant by the cultivation or development of the power of observation?* (*5*)

(*b*) *Show by giving directions and illustrations how the power of observation may be developed or trained.* (*5*)

The cultivation or development of the power of observation means the cultivation or development of the senses in such a manner that vibrations given out by any new objects are quickly, easily, and correctly interpreted by the nerve centres so as to bring a train of thought to consciousness. Two boys walk along a country road. One, A, has been trained to observe; the other, B, not. A notices and observes. At end of walk should you question him he could tell you how sky looked, how road looked, in what direction was the wind, various birds seen, their nests, kind of trees along the road, kind of rocks, wild-flowers seen, changes of season as shown in vegetation, what the weather of late has affected etc. B has been oblivious of all these things and has probably not seen any of them. The same things gave forth vibrations but his senses did not convey vibrations to nerve centres for interpretations.

(b) Tell children on way to and from school to look for some particular thing during the course of several days, for instance, appearance of ground in spring after rain when worms have been at work. Have them try to find cause. Their interest is then aroused. Talk in school on subject at end of time of observation and appoint a new topic. Treat in same way.

Present objects for study. Bring out points you wish observed by questions upon those special points.

453. Attention and interest: ten rules.—*Discuss each of the following rules, indicating in particular how your views bear upon attention and interest.*

1. Introduce new subjects objectively when possible.

This rule embodies many of the elementary axioms. It may be expressed in another way by saying that the inductive method should be used, or that we should proceed from the empirical to the rational, or that sense instruction should be

employed, or that visualization is made possible by the co-ordination of all the senses. In presenting the subject of liquid measure it is advisable to have a measure for gill, pint and quart and then to allow the pupils by actual measure of water to see that the table expresses a truth. This process involves attention, interest and self-activity.

2. Present only a few ideas at a time.

This is another way of saying that the mind can exercise only a definite amount of energy at any one time. This amount varies with each natural ability and degree of development. It is another way of expressing what De Garmo calls the law of successive clearness. This process of limiting the lesson to a few ideas is an aid to interest and attention by permitting the child to comprehend all that is given to him instead of presenting more matter than he can assimilate. The presentation of too many ideas becomes a cause of fatigue and then all the mental energies are affected.

3. Ask questions promptly and require prompt answers.

The relation of this rule to attention and interest lies in the necessity of alertness when the teacher does ask questions promptly and the pupils do answer promptly. It gives neither time nor inclination to let the mind wander from the point under discussion, and so it places pupils, teacher and subject-matter within the circle of instruction. In other words, it is a practical way of covering subject-matter and then passing to another kind of subject-matter before the pupils have time to become wearied by the work.

4. Ask the questions before you call the name of the pupil.

If the pupil's name should be called first, then all the other pupils in the room may feel that they will not be called upon, and hence it is not necessary for them to give their attention to the question or to the answer.

5. Do not repeat a question

This holds good as a general rule but still it has exceptions. The teacher who makes it customary to repeat a question

every time a pupil asks for the repetition will soon find that the children do not give their attention to what she is teaching because they know that she will repeat the question upon the subject-matter. The exception relates to the development of new matter in which time is required by the pupils for assimilating the new ideas. The repetition of a question in the same or in modified form impresses the leading ideas by giving the children time to grasp the new matter as it is related to the apperceiving group.

6. Do not look fixedly at the pupil you are going to call to answer.

The objections to this way of conducting a recitation are the same as for asking the question after calling the pupil. The pupil knows he is to be called and other pupils know that they are not to be called for that question. The other point of view regarding the rule is in favor of looking fixedly at the pupil. In every class there are certain timid or nervous or backward children who need to have warning so that they may compose themselves before trying to answer the question. While answering the question it is then a means of direct encouragement to such pupils to feel the assurance that the teacher is working with them and is in sympathy with them.

7. Do not look steadily at the pupil who is answering.

This rule has the two points of view expressed in the preceding rule. If the teaching process means a harmony of thinking between teacher and pupil, it is no violation of proper methods for the teacher to look steadily at the one who is answering. If opposed to the principle of including other members of the class, it may be said that successful school management considers the whole class a unit and all are supposed to be giving attention to the teacher whether he is looking at one or at more than one.

8. Vary your ways and try to arouse curiosity. Make all exercises brief.

This rule is a summary of many of the points given in the preceding rules. In saying that it is necessary to arouse curiosity, it is simply putting emphasis upon preparation as one of the formal steps of instruction. In making exercises brief, the teacher is again guarding against inattention and fatigue.

9. Speak in low distinct tones.

The first reason in favor of this rule is that pupils are led to adapt themselves to the standard set by the teacher. If confusion or disorder causes the teacher to speak in louder tones, the children have no cause for trying to remain quiet to hear what the teacher says. A low, distinct tone necessitates stillness in the room; it does not disturb the dispositions of pupils who are inclined to be nervous; it does not give an example to pupils in loud or harsh speaking; nor does it put the teacher under any personal feeling of her inability to manage the class and cause them to adapt themselves to her manner of speaking and teaching.

10. Show your interest in the subject.

This rule needs no defense. Pupils can judge human nature even better than adults can judge it, and if a teacher is not interested in what she is teaching she has no moral right to expect her pupils to be interested in that subject. That both should be interested is a requisite for the kind of teaching that looks upon their class as a unit in the larger social organization.

454. Consciousness.— *What is meant by consciousness?*

The distinctive character of whatever may be called mental life is consciousness. Whatever we are when we are awake, as contrasted with what we are when we sink into a profound or dreamless sleep, that it is to be conscious. What we are less and less, as we sink accordingly down into dreamless sleep, or as we swoon slowly away; and what we are more and more as the noise of the great outside tardily arouses us

from our afterdinner nap, that is consciousness.—Ladd's Psychology, 30.

455. Attention.—*Define, discuss and illustrate attention.*

(a) Attention is concentrated consciousness. Hume says attention is consciousness occupying itself with an object. In consciousness we are aware of many thoughts and objects, but in attention all the powers of the mind are directed to one thing or object. In the best forms of attention an object or sound may be directly presented to the senses and yet I am unaware of the fact. We give best attention when there are no physical or psychical obstacles. For instance, I am very tired, bodily tired. I go upon a street car. Usually I attend to things going on around me. Now, I give no attention to them. I am too conscious of my weariness. This weariness is a physical obstacle which inhibits attention to the things around me.

I pick up a book in Russian. I open it and I try to interpret it. I fail. I lose interest and find myself unable to concentrate my mind upon the book. It is too difficult for my mind. I have no apperceiving group to bring the power upon an object. Therefore, I cannot give attention because this is a psychical obstacle.

Attention is of two kinds, voluntary and involuntary. I am attending a course of lectures. There are no physical obstacles in the way of my attending, that is, I am not tired. The room is warm enough, the air is good, and all other physical environments are satisfactory. There are no psychical obstacles. The speaker's topic may be new to me, but it is not beyond my comprehension. The speaker begins and I listen and follow the trend of his thought. I am giving voluntary attention.

The speaker occupies a position on a small stage. To the left is a door partly open. About the middle of the lecture a small dog peers in the doorway and runs across the stage to someone he knows in the room. By an involuntary act my mind leaves the trend of the lecturer's thought for a few min-

utes and pays attention to the dog. This is involuntary attention. So involuntary attention is consciousness, not controlled by the will, occupying itself with an object. Voluntary attention is consciousness, controlled by the will, occupying itself with an object. (b) A voluntary action is an action performed as the result of a volition on the part of the doer. It implies that the doer knew what he was doing and he did it of his own free will. It also implies that the action was performed as the result of the interpretation of vibrations by the brain rather than the result of an interpretation in a nerve center located outside of the brain in the spinal column.

Illustration. I am working at my desk. The window is open. The wind blows a sheet of paper against my hand. I remove the paper without being conscious of my action and without taking my thought from the work in which I am engaged. This is an involuntary action. A few minutes later during the same kind of study I hear of a friend's illness. I stop my work and immediately prepare to go to see that friend. I am conscious of what I am doing, but I do it of my own will. This action is voluntary action.

456. Will: James on balky will.

"The teacher often is confronted in the schoolroom with an abnormal type of will, which we may call the balky will. Certain children, if they do not succeed in doing a thing immediately, remain completely inhibited in regard to it; it becomes literally impossible for them to understand it if it be an intellectual problem, or to do it if it be an outward operation, as long as this particular inhibited condition lasts. '—James.

(*a*) *Describe wrong ways of dealing with such cases, with their usual or natural results.*

(*b*) *Describe a psychologically right way of dealing with such cases. Give reasons.*

(a) This quotation from James is found on page 182 in Talks to Teachers. "Such children," he says, "are usually treated as sinful, and are punished; or else the teacher puts

his or her will against the child's will, considering that the latter must be broken. Such will-breaking is always a scene attended with a great deal of nervous wear and tear on both sides, a bad state of feeling left behind it, and the victory not always with the would-be will-breaker.

(b) The answer is quoted from James. When a situation of the kind is once fairly developed, and the child is all tense and excited inwardly, nineteen times out of twenty it is best for the teacher to apperceive the case as one of neural pathology rather than as one of moral culpability. So long as the inhibiting sense of impossibility remains in the child's mind, he will continue unable to get beyond the obstacle. The aim of the teacher should then be to make him simply forget. Drop the subject for the time, divert the mind to something else; then, leading the pupil back by some circuitous line of association, spring it on him again before he has time to recognize it, and as likely as not he will go over it now without any difficulty.

457. Will: method of training.—*Outline a useful method of training the will.*

One means of training the will is that of allowing as much liberty as possible to the individual pupil, to throw him upon his own resource and responsibility; giving him certain work to be performed within a specified time, leaving the exact time, place, and manner of doing the work to him. Allow him the freedom of the room, the building, the grounds, with the understanding that the privilege must be rightly used. The point is to get him in the habit of acting on his own initiative and to exercise proper control over his actions; both important functions of the will.

Suggest to pupils various things that they might do to improve their village or to alleviate the distress or add to the happiness of people less fortunate than themselves. Arouse their feelings to the point where they are ready to *do* something, then put the opportunity before them.

Organize little clubs or societies for the accomplishment of certain special ends, as the protection of the birds, the cultivation of a flower garden. Furnish all the needed instructions as to how to do and create the desire to do, but leave the *doing* to the children.

458. Mind-wandering.—(*a*) *Describe mind-wandering, and give the psychological causes of it.*

(*b*) *How can mind-wandering be overcome or cured?*

No matter how scatter-brained the type of a man's successive fields of consciousness may be, if he really care for a subject, he will return to it incessantly from his incessant wanderings, and first and last do more with it, and get more results from it, than another person whose attention may be more continuous during a given interval, but whose passion for the subject is of a more languid and less permanent sort. Some of the most efficient workers I know are of the ultra-scatter-brained type. One friend, who does a prodigious quantity of work, has in fact confessed to me that, if he wants to get ideas on any subject, he sits down to work at something else, his best results coming through his mind-wanderings. This is perhaps an epigrammatic exaggeration on his part; but I seriously think that no one of us need be too much distressed at his own shortcomings in this regard. Our mind may enjoy but little comfort, may be restless and feel confused; but it may be extremely efficient all the same.—James, Talks to Teachers, 114.

459. Apperception, correlation, general notion, logical memory.—*Define each.*

Apperception is mental assimilation. It is the gaining of the understanding of new knowledge by means of past experience and knowledge. I see a strange flower. I recognize it as a flower by means of my former knowledge of flowers I have seen.

Correlation means the relating of various kinds of knowledge. The mind remembers by association of ideas. Correlation

means the bearing in mind of this idea and the associating of knowledge of things along geographical lines with knowledge of things gained along historical lines, etc. It does not mean the teaching of geography and history in one lesson but the bringing to bear upon the history lesson the facts learned in the geography lesson. Likewise it means the taking up of related subjects in different lessons at same period. When studying geography of England, study likewise history of England and literature of England.

General notion corresponds to the term concept. A concept is a representation answering to a general name. Many psychological elements enter,—sensation, perception, memory, imagination, judgment, concept.

A logical memory is a memory which reproduces to minds events or ideas through their logical connection or continuity. It differs from mere rote memory and recalls by means of association. I know the date of the founding of St. Augustine I wish to recall the date of Santa Fe. I have learned that there are seventeen years difference. I then compute and remember the date of Santa Fe. This is example of logical memory.

460. Attention and interest.—*What is the relation between attention and interest? Mention five of your devices to arouse and sustain interest in the recitation.*

Attention is concentrated consciousness. Interest is the result of continued acts of attention. We are interested in that which we understand. Attention gives us such understanding. To sustain interest:

I. See that every child gets a grasp upon the subject matter. See that he understands thoroughly. Do not go on to next step until each child is ready for it.

II. Assign outside topics. Boys especially like this. If you use this means, be sure you do not neglect to call for work assigned. Such neglect is fatal.

III. Wherever possible, get knowledge first hand, as in nature study.

IV. Use maps and charts wherever possible.

V. Vary lessons and way of conducting recitation. Let children sometimes do the questioning. Let them prepare one question each upon the lesson to be put to class. Questions founded upon lesson.

461. Imagination: definition, classes, uses.

Imagination is the power of thinking or calling into consciousness feelings of things, persons, qualities and conditions of all sorts not present to the senses. It is twofold in its nature, productive and reproductive.

In its reproductive nature, it corresponds to the various senses. It is, for instance, possible to divide images into audile, visual, gustatory, motor and tactile images. Some people are stronger along one line of image-making, some along other lines. The attempt has been made to classify people according to their type in this respect. The teacher there talks to the audiles, writes on the board for the visual, makes motions and enunciates prominently for the motors. As it cannot, however, be proved that the people who see images most clearly before their mind's eye necessarily make the best responses, and as all children possess these powers in some degree, such attempts seem questionable. Thinking is forever aided by getting images of things to be stored away in memory as clearly as possible because vividness is one of the factors in memory.

In its productive power, imagination has resulted in the best achievements of the race. Imagination, in this direction, is the power to put parts of things, qualities, and conditions into new forms. We call this creative imagination. This functions largely in ethical thinking or idealization. Here we get a construction of all the qualities which appeal to us as standing for the highest good.

The uses of the imagination may therefore be classed under two heads, (a) its memory uses (b) its creative uses.

The abuses of the imagination may be thought of as (a) failure to get clear images or failure in visualization, making for weak memory; (b) over-emphasis of images rather than responses, benumbing to self-activity.

The creative uses of the imagination may be thwarted by crushing out individuality, telling too much in history; talking too much in drawing; failure to direct thought toward original thinking.

462. Memory discussed and illustrated.

Discuss fully your attitude towards the memory in regard to its function and training.

Memory is of two kinds, the purely verbal and the logical. The former, by dint of continued repitition and reproduction, grasps and hold the words of a statement, with little or no regard to its meaning in many cases. I remember reading of an experience one teacher had of this truth. Her grade, fifth year, were able to sing most lustily "My Country 'tis of Thee" without their books. They did so to the admiration of her visitors. But one day that Nemesis who digs the steps of the great entered her door. An inquiring visitor asked to have the children write the first stanza that he might take it home as a trophy of his visit. The first paper the teacher took up, began "Mike Own Tree, tissuf the"—let us draw a veil over the remainder.

But the logical memory is of different nature; the mind possessing it apperceives, associates, reasons. The substance is secured, a logical connection between facts is established; and the whole is presented not in the book form perhaps, but in terms of the pupil's consciousness, of which it has formed a part. The perfect memory would combine both the words of the master and the thought which has become the pupil's own. The following is a "plan for perfect possession" which I have

used for several years, with senior classes in teaching "L'Allegro" and "Il Penseroso." I give it in outline.

I. Preliminary study.
   1. Milton's England. (Use Maxwell Parrish's illustrations.)
      (a) Horton in particular.
      (b) Scenery about it.
   2. Milton's Life.
      (a) Especially boyhood and growth.
      (b) Maturity as contrast to (a).
   3. Lyric poetry.
      (a) Reflection of poet's mind.
      (b) Embodiment of beautiful thought in beautiful words.

II. First Reading.
   1. Nature of thought expressed.
      (a) General theme.
      (b) Minor theme.

III. Second Reading.
   1. Careful study of all peculiarities of syntax.
      (a) Explanation of all terms, as classical allusions, etc.
      (b) General division into parts to get working plan.

IV. Third Reading.
   1. Comparison of two poems for general parallelism.
   2. Selection of particular thoughts paralleled in each, and learning words for several.
      (a) Music.
      (b) Birds.
      (c) Dawn.
      (d) Evening.
      (e) Shakespere.
      (f) Human life.
   3. Parallels in other parts.

V. Review.

1. Reading of Macaulay's Criticism from Essay on Milton, and application.

At the close of this study I have found, almost without exception, two results;—first a thorough, in some cases a literal possession of the poem; second, a love for the author which has led to further voluntary reading of his poetry,—and this is the chief aim of teachers.

In general, memory may be cultivated by (1) a clear presentation of the idea to be learned, showing its central theme (2) requirement from the pupil of his understanding of the theme. (3) Choose a poem, read a stanza four or five times, close the book, recite to yourself; if you fail, reread. Then write from memory. Compare with the original. In case of error, reread, then write. Continue until the whole selection, not merely its parts, is your property. (4) Require repetitions at unexpected moments. (5) Formation of associations,—as when a beautiful landscape is seen, recalling what various writers have said of such scenes. (6) For all forms and uses of memory, besides mere learning, the constant putting to use what has been learned.

463. Imagination and thinking.—*Explain the connection between imagination and thinking. Discuss the uses and abuses of imagination in education?*

Charles Johnson in his elements of Literary Criticism places the constructive imagination in the power to create, as the truest mark of genius. Without this power to create, man's thought would be confined to the limits of his own sense and experience. We could think only in terms of what we had ourselves seen and felt,—all other emotions, all other experiences beyond our ken. True thinking would be impossible. By creative or constructive imagination we select elements from our past experiences which our apperceiving powers show us may be associated or combined into one, and from these create an image in its entirety beyond our experience,

but made up of, or working out from, elements we know. An American boy of the twentieth century can construct a pretty clear image of the Knighthood of old from what he has seen, in pictures in real life, of armor and weapons of those days, and by seeing a few coats of arms, can make a fairly correct image of The Templar's emblazoning, and pick him out from a picture in Ivanhoe. This is the right use of imagination,—the ability to interpret the new and to put it to use practically, and as an apperceiving group for new information. On it the scientist relies; he pictures what should be and then combines elements to demonstrate that it may be, and is. But unbridled imagination in fantasy is as great a danger as the former is a good. The imagination must be trained like the will, to obey the dictates of reason or it becomes like the will, a bad master. Unbridled imagination blunts the power of discrimination, the unreal, not the ideal, becomes real to us. We dwell in a world of wild fancy where our wishes, our wills, are never crossed, and become every day more dissatisfied with our real life. Accurate thinking becomes impossible, for the wild flights of fancy have disdained the steps of logical connection; and the outline of truth has become lost in the cloud of lying fancies with no basis of fact. The poet sees the ideal, and longs for its accomplishment; but it is an ideal which is the flowering of all that is best in the present. The dreamer sees the unreal and grasps at it for selfish gratification; but his fingers clutch simply air; he falls and is destroyed by his own failure to see that what we want is not always what is best for all, and that no man can hope to live utterly to himself and despise truth.

464. Stages in intellectual development.—*Explain the view that there are stages in the development of the intellect.*

"We have seen that in the very beginning of the child's learning the world he gains nothing but isolated sense impressions about it; and whatever reactions he makes upon it are purely instinctive. This is what may not inappropri-

ately be termed the *sensational period* in the learner's career, employing the term current in psychology. Soon the child makes a start in arranging these impressions in the patterns in which they are presented by the objects to which they belong; and this may be styled the *perceptional period*, which, like the sensational period, is of course never entirely completed. It is legitimate to consider them as periods only because certain types of activities are especially prominent at these times. It seems proper to remark here that in an older day it was maintained that the mind from the beginning apprehended the whole of anything which was acted upon by the senses. The infant appreciated the form, size, taste, and all the other attributes of an apple the first time he looked at it, for instance. But modern psychology holds that the percept is built up gradually through the co-ordination of simpler elements. It is the product of organization of factors originally independent. It is a complex which in any individual case is constantly changing with increased experience. Vision contributes some elements of the complex, while taste, touch, the muscular sense, and so on, furnish others."

465. Particular notion to general notion.—It is a chief business of education to pass from distinctly perceived individual notions to clear general notions.—*Pestalozzi.*

(a) Explain what is meant by individual notions. (b) By general notions. (c) Give an example of passing from individual notions to general notions. (d) Describe briefly a mode of teaching which violates Pestalozzi's principle.

(a) An individual notion means a percept or a group of percepts from an individual object. An apple is placed before me. I look at the apple. I handle it. I have a percept of that apple through feeling and sight. Both percepts refer to the one apple and therefore I have an individual notion of apple. An individual notion, then, is a notion of a thing gained through a sense medium or through several sense mediums.

(b) General notion answers to the term concept while individual notion corresponds to the term percept. The general notion requires more work and experience on the part of the mind than the individual notion. General notion may be given in a term which answers to a general name. A common noun is a general notion—corresponds to a general name while a proper noun refers to but one individual and is an individual notion.

(c) Take the example given in (a), an apple—ordinary red apple. Let us suppose this is first apple ever seen. From it comes the following ideas:

of redness
of size
of roundness
of appearance of blow end
of smoothness, etc.

The next day a green apple is seen. The ideas are the same, but redness is replaced by the idea of greenness.

Next a small red apple is seen. Idea is again modified with regard to size. Some apples are smaller than others. Then a large apple is seen. Idea again modified. Apples are large, small or moderate size. So we might go on with yellow apples, apples of other shapes (crow's egg). In the case of each apple presented, the mind recalled images of the other apples seen. Comparison and abstraction took place. Finally the child gets a general idea which is called up whenever apple is presented to the mind. This idea apple is a general notion and refers to no particular apple.

(d) Rote teaching of definitions behind which there are no ideas is in direct opposition of Pestalozzi's idea. A child may glibly give definitions, say in grammar, and have no idea as to the meaning.

466. Clearness in education.—*What is meant by clearness in education?*

Clearness in education is that stage of method in which the mind of the pupil apprehends the presented facts with clearness of mental vision; the first formal step in method is clearness according to Herbart. The preparation as usually understood in the formal steps of instruction is a means to clearness.

467. The meaning of terms: sensation, concept, image, induction.—*Explain and illustrate the following terms: sensation; concept; mental image; inductive reasoning.*

A sensation is a simple mental state resulting from a physical stimulus. While at work this afternoon, I became conscious of a noise outside. I paid no attention to it until some one inquired if we kept pigeons. We found later that some children were drawing a box along the sidewalk at some distance from the house. The first state of mind in which a noise was heard but its nature or cause unknown, was sensation.

A concept is a general notion. It is a representation in our mind answering to a general name. The concept ot a noun is a word used as a name.

A mental image is a revived percept. While reading the other day I came upon the name "Vineyard Haven." At once there came to mind the picture of the Haven as I had seen it one evening at sunset, when the different crafts were anchored for the night.

Inductive reasoning is the process of establishing a general truth through particular instances. The teacher wishes the pupil to know that an adverb is a word used to modify a verb or some other part of speech. She does not tell him this, but has on the board good sentences illustrating the adverb used to modify a verb, a participle, and adjective, or other adverb. The pupil finds these facts and at the close of the lesson gathers them into the form of the definition. When, however, he finds examples illustrating this definition he uses deductive reasoning.

468. Active, mobile children.—"Some children are more active, or mobile—more suggestible; while others are more passive

or receptive, less suggestible. The impulsive, active children are always responsive, but always are in error in what they say and do; they are quick to generalize, poor at making distinctions and they are characterized by fluidity of attention. The sensory or passive children are more troubled with physical inertia, more contemplative, less active in learning to act out new movements, less quick at taking a hint, etc." (After Baldwin). *Comment on this classification. Suggest ways of dealing with each of these types.*

I do not agree that impulsive, active children are always in error in what they say and do, are quick to generalize, poor in making distinctions and characterized by fluidity of attention. This designates some impulsive, active children, but not all. I have one in my school at present who could be so characterized. This one can naturally see just why I have had her repeat the work of last year. Last year she gained absolutely nothing. This year I hope to have her gain sufficient to be promoted in June. With the second characterization of passive children I agree. I have had until just now such a boy in my school. He likewise is repeating last year's work. His physical inertia is so great that I could not hope to have him up to grade by June. He has therefore been removed to a special school where individual attention can be given in hope of bringing him to grade.

469. Many-sided interest.— The aim of instruction, therefore, is not the production of a many-sided knowledge, but of a many-sided interest. (Rein).

Explain this statement, and give reasons for accepting or rejecting it.

This statement means that if we have a many-sided interest we have a full development of all the powers of the mind and many-sided knowledge will result. Life is a process of learning from beginning to end. We do not stop learning when we leave school. If our powers for learning have been cultivated interest will lead to the necessary knowledge. While if the

aim has been for many-sided knowledge we may both lack the knowledge and the power for gaining it. If this meaning is accepted I accept the statement in the above.

470. Subjects suited to training of faculties.—*Classify the elementary studies with special reference to their respective values as suitable material for the several faculties.*

The following classification is given on page 23 of Roark's A General Outline of Pedagogy (Hinds and Noble):

1. For sense-observation
   - Nature-study and geography.
   - Object work in all branches.
   - Physiology.
   - Drawing, clay modelings.
2. For memory
   - The fundamental facts in all branches.
   - Geography.
   - Physiology.
   - Spelling.
3. For judgment
   - Arithmetic.
   - Technical grammar.
   - Nature-study—the "why" and "how" of common things.
4. For imagination
   - Geography.
   - History.
   - Literature.
5. For the feelings.
   - Nature-study (curiosity).
   - Reading and literature.
   - Biography and history.
6. For the will—the same as for the feelings.

471. Formal steps of instruction.—*Name the formal steps of instruction, and tell why such processes are necessary in every complete act of instruction.*

These steps or processes are:

1. Preparation.
2. Presentation.
3. Association.
4. Generalization.
5. Application.

These five steps of the Herbartians are necessary in every complete act of instruction. We should lead from known to related unknown. A child has vague notions of many things. It is the work of preparation to bring these vague notions out of chaos and so combine them that they may form a foundation upon which knowledge may rest. The child's apperceptive powers are thus made ready or expectant for the presentation which is to follow.

The second step or presentation is of vital importance. The subject of the lesson may be of the greatest importance to the child but unless this same subject is brought home to him by presentation its value is nothing to him. Although not well to do so, one might omit preparation, but it is impossible to have an act of instruction without presentation.

Association is the third important step. The preparation has recalled past knowledge, the presentation has given new knowledge. It is the work of association to bind these into a whole that they may become a part of the child's mind and a basis of preparation for further acts of instruction.

The fourth step is generalization. This step sums up or defines the knowledge gained. It puts this same knowledge into concise form; i. e., it classifies or defines knowledge gained. After generalization the pupil is ready for deduction of general knowledge along similar lines.

Application is the final step. It is another term for drill. The human mind is so constituted that if certain knowledge is not gone over again and again, that knowledge is soon replaced by other knowledge. Hence, the importance of drill in different forms until knowledge becomes a permanent mental possession.

Educators differ about the number of formal steps. In such cases they combine two or more of the above. Dexter & Garlick's Psychology gives but two, preparation and presentation. With them presentation includes presentation proper as well as association, generalization and application. New York lesson-plans have

I. Aim.

II. Preparation.

III. Presentation.

IV. Application or drill.

472. Marking pupils' papers.—*In marking pupils' papers do you indicate what is right or what is wrong? Why? Do you use per cents or letters? Why?*

The purpose of all marking, like Socratic questioning, is twofold. The first aim is to show the child the existence of error in his answers; and the second aim to cause him, through his own efforts to reach the truth. So the ultimate process requires the pupil to separate what is right from what is wrong —a matter of subtraction; and the teacher's place of marking should be whatever is most helpful in causing the individual pupil or the class to attain the desired ends. Various plans may be justified.

1. Sometimes indicate both wrong and right. The child then contrasts amount correctly done with amount incorrectly done.

2. Sometimes mark only wrong. If children are becoming too self satisfied, too easily pleased with a poorly learned lesson, arouse the instinct of pugnacity by showing him his poor work. He will strive to overcome weaknesses. See Talks to Teachers, p. 54.

3. Sometimes mark only what is right. This gives encouragement to the backward pupil and will often bring up a pupil who is laboring under discouragement. This is a good method to try with the dull, backward child of little brain but

great industry. Such types are found in every school. They are the ones whom a little praise does not spoil. Tactful praise of this kind, i. e., the bringing out of good points, may also be means of converting the bad boy into the model pupil.

I should use per cent whenever the work can easily be thus marked as in spelling and written arithmetic. It is an honest way and children can compute their own marks. They like to do this. This is a good place to use emulation. Children compare per cents from week to week and try to do better.

In such studies as grammar, history, geography, oral arithmetic, etc., it is better to use letters. One cannot determine accurately the per cent in such studies as one has no exact standard of measurement. The mind gives judgment or decision in such studies as excellent, good, fair, unsatisfactory, poor. Letters may be used signifying this classification.

473. Home study: arguments for and against.—*Give arguments for and against the assignment of home study.*

Home study gives much aid in the education of the child. Its advantages are many. Herbart holds that education is development of moral character. To hold a child responsible for work done in a certain way and in a certain time outside of school hours is certainly developing his moral character. Home study also gives the child's mind a chance to become self-active in reflection upon subject-matter taught during school hours. If the child is made to strengthen in mind the knowledge gained in school during that day, his apperceptive powers will certainly be greater than if the day's subject-matter is allowed to remain dormant in the mind until brought up again in the next day's lessons. Then, too, a child may understand thoroughly the subject-matter given during recitation, but unless it becomes a part of himself through reflection, he sustains a loss of power not otherwise to be secured. Home study is of especial aid in bringing to normal grade the dull or backward child. A boy in fourth grade was below grade in September. After two or three weeks' trial, the teacher

notified the mother of state of affairs. Arrangement was made by which this child did a certain amount of work at home each night. By January the boy was fully up to grade and by May he was capable of doing the work of the next grade. This he was allowed to do. Work continued during the summer and in September this boy entered the sixth grade.

Home study has some disadvantages. The tired, ill, or nervous child is injured by home study. When home study keeps the child from recreation in the open air, it is an evil to be avoided. If the child has to do work in a poorly lighted room, no amount of mental gain can compensate for the injury to his eyes. In a poor district this consideration might be very important.

In regard to what work should be assigned for home study, take this general rule: Assign what will review or reinforce what was taught during the day. Spelling, geography, history, or special topics for collateral reading are suitable assignments for the average pupils. Mathematics is not suitable home work for primary pupils. See sections 480–481, p. 240, Science of Education.

A HIGH SCHOOL ANSWER FOR 473.

Home study appears necessary on account of the stupendous task of giving to the individual any real command of his "spiritual inheritance." The amount of ground to be covered is so tremendous, the requirements of higher institutions so pressing, the examination system so exacting, that it is not within the realm of possibility to do all we are at present obliged to do in the school. It may be that our knowledge of the human mind and the possibilities of correlations are the underlying sources of the difficulty. Aside from all this, however, it is advisable to assign home study for the sake of the development of self-activity and independent work so desirable in the individual.

In the last few weeks I have, however, made a successful experiment in lessening home study. I believe that girls often

pour over their books too long from pure conscientiousness. I suggested to some five girls who averaged in the 90's on successive tests to leave the books in my subject in the schoolroom on Friday nights. I told them I should like to see what they could do without preparation on Monday morning. I then arranged to make Friday a kind of review day as far as the recitation was concerned. I sent a number of the most backward pupils to the board with questions written on slips of paper to bring out "mooted points," did individual work with a few others, and allowed my stars to work on Monday's lesson which naturally had been assigned at the beginning of the period. The experiment has worked beautifully. Everybody wants to get into the star group and leave books in their desks Friday night. Attention has increased, and the tone of the work is good.

To summarize the bad side of assignment of lessons I should say :

(a) Attention to verbal presentation is often weak, because the child thinks, "Oh, it's all in the book anyway," which results in

(b) Consequent waste of time.

(c) Neglect of these opportunities for learning of practical matters which the home affords.

(d) Danger of new study.

474. Meaning of terms in pedagogics: natural punishment, etc. *(a) What is meant by "natural punishment?" Illustrate. Give an illustration of its non-applicability. (4). (b). What did Rosseau mean by "education according to nature?" Describe or illustrate a method of instruction that you regard as not "according to nature." (4). (c) What is meant by "inductive teaching?" Illustrate inductive teaching with reference to the idea of a transitive verb. Illustrate deductive teaching of the same idea. (6).*

(a) Epitome page 184, point 3 under section 365. General illustrations in sections 366 and 367.

The non-applicability of this punishment is shown in the familiar illustration from Rousseau when the child is made to sit or sleep in a room where the window was broken by the child. Pneumonia or death might be the result. Such results are too serious a punishment for the violation in conduct. An illustration in school work can be found in permitting a pupil to neglect his studies all through school in the hope that the pupil will realize his loss when he comes to be a man. In this case the penalty will work its effects at a time when the person punished is unable to make up for the neglect in school. Such natural punishment cannot be favored. A school illustration of its applicability is found in the case of a child who continues throwing paper on the floor. The natural punishment is to make the child pick up all the pieces of paper. If a child refuses to do his work during the school hours, the natural punishment would be to require him to do work while the other pupils are having recreation. A tardy pupil receives natural punishment when he is made to remain after school to make up the time lost in the morning. See also Dexter and Garlick's Psychology, 372. (b) Epitome, page 180, sections 362 and 363. A method of instruction not according to nature may be illustrated by giving instruction on corn. Suppose that the information is secured entirely from text-books or is given in the form of a lecture by the teacher. In neither case is any picture or other representative object presented for observation. Memory alone is exercised in securing a knowledge about this plant. The lesson has failed to utilize as many senses as possible; the pupils must depend upon their imagination; and the whole lesson is lacking the element of interest. This lesson presented according to nature would have the object or its picture, and children should plant corn to observe its growth or visit a field where corn is growing.

475. Meaning of terms in pedagogics.—*Explain the terms (a) "learning through self-activity;" (b) "things before words;" (c) "mental discipline;" (d) "harmonious development;" (e) "method-whole." (10).*

(a) "Learning through self-activity" means that the child shall be directed so that his own efforts may be the means of education. It involves a knowledge of what to study, how to study it, and where to find it. It presupposes attention to the directions of the teacher and interest in the matter to be mastered. Self-activity is a process tending toward self-realization; it is, in fact, the one safe way of attaining the fullness of self-development which is the aim of all education.

(b) "Things before words" is a concise way of expressing the aim of realism. In the sixteenth century there was a movement against Latin and Greek and in favor of French and German, geography, science and other real things. It was argued that the study of Latin and Greek was largely a matter of memorizing forms. The aim of the realists, therefore, was to put pupils into touch with their environment. Another meaning of this expression is seen in the inductive method. It is a process of learning by experiment instead of by reading or listening. Pupils handle natural things and use their own self-activity; they get a knowledge of the real things, their properties, their uses, etc., before the principle or rule is put into words.

(c) Discipline is that training of a faculty which gives it power to accomplish more than it would have been able to accomplish without such discipline. So mental discipline means a training of the mind, with a view to accomplishment as expressed in the definition.

(d) Harmonious development refers to a balanced development of all human powers. This development includes mental, moral and physical training. It is what is sometimes called a development of the whole man; and it is the kind of training that Spencer requires for complete living.

(e) A method-whole is an outline or plan of a certain amount of subject-matter which can be considered as a unit. The method-whole has been defined as an arrangement of matter that may be presented according to inductive-deductive method.

It has been explained as a process of passing from particular notion to general notion. A method-whole may embody all of the work presented during a month, as the drainage of New York State. Then that larger method-whole may be subdivided into other method-wholes according to the work of a week or a day. Thus the definition of an adverb is suitable for a method-whole; but in that work there is another method-whole embodying the lesson on the verb. In short, it is an arrangement of subject-matter to suit the natural capacities of the class.

476. Culture epochs.—*Explain the meaning and application of culture epochs.*

The term culture epochs involves the idea that there is a parallelism between the development of each child and the historical development of the pupil or the race, and that in this parallelism we find the guiding principles for the sequence of subjects or at least topics of instruction. This point of view is the basis for concentration as understood by Ziller and his authorities. The culture material found in religion, history, and literature forms the core of the curriculum. The sequence of the subject-matter is in accordance with the ages or epochs in the history of culture or civilization through which the people to which this child belongs has passed.—Baldwin, 248.

477. Concert or rote recitation.—*State your attitude toward concert recitation.*

The concert recitation has been designated the device of the lazy teacher. It is easier for a teacher to be satisfied with certain correct answers from the majority of the class than to take time and energy for individual tests. The advantages of the method are as follows:

1. It is an easy means of stimulating social interest and attention.
2. Timid or backward pupils may be encouraged to answer with the others while such timid pupils would not do so well if they were called upon to answer alone.

3. It is a saving of time in rapid reviews or other exercises of that nature.

478. Concert recitation.—*(a) From the psychological point of view what advantage and what disadvantage is there in rote or concert recitation? (b) To what extent and in what subjects would you make use of such an exercise? Give reasons.*

(a) Rote or concert recitations are usually used as memory drills. They presuppose that the thing reproduced has been apprehended and kept in memory. Now we give exercise to the third stage of every complete act of memory or the stage of bringing to memory or reproduction. If concert recitation is used as memory drill in this manner it is perfectly legitimate as the words given by children correspond to ideas already in child's mind. Where such work is used to fix ideas for first time in child's mind it is wholly at fault psychologically. It is in opposition to the principle that the mind should gain through the senses its knowledge of everything external to itself. The words said do not correspond to concepts in child's mind.

(b) I should use concert work where I wished for repetition for the purpose of exercising memory and yet had not time to give each child an opportunity to recite. Herbart recommends repetition of this kind. It is well to use concert work also for variety. Child grows tired of always doing things in same way. If we are sure the ideas are behind the words, it promotes self-activity. It is well to use it to overcome diffidence on part of child. In reading for expression I find that children will imitate good expression if allowed to give in concert where a failure would result if the same recitation must be given alone. In reading Shakspere I have been led to find where diffidence was first conquered in concert work. Concert is useful in promoting self-activity and strengthening memory in the recitation of memory gems. Concert recitation likewise gives social stimulus. Children like to work together in this way.

479. General method applied to grammar.—*Briefly outline a lesson to distinguish predicate noun and object noun according to the Herbartian view of method.*

I. Aim. To distinguish predicate noun and object noun.

II. Preparation.
1. Define sentence. Illustrate.
2. Define subject. Illustrate.
3. Define predicate. Illustrate.
4. Define noun. Illustrate.

III. Presentation. Have these sentences written on board.
1. Longfellow wrote poems.
2. Longfellow was a poet.
3. We like school.
4. This is a school.
5. Labor disgraces no man.
6. You will be a man.
7. Columbus discovered America.
8. Lincoln became president.
9. We like grammar.
10. Some nouns are objects.

The preparation reviewed and impressed subject and predicate and noun. Without further preparation we can begin the presentation of this lesson. Have first sentence read. Cover word poems. How many parts in the sentence not covered? There are two parts. Taking those two words is the sentence complete or incomplete? It is incomplete. What completes the sentence? Poems. This shows that the sentence has a third part Read the second sentence and proceed as in the first sentence. Pupils see that the second sentence has a third part in the word poet. In this second sentence to what part of the sentence does the word poet refer? If this does not bring the answer the teacher must question to show that poet means the same as Longfellow. Give name predicate noun. Read fourth sentence and bring out the thought that school means the same as the subject this. Give name predicate noun. Read sixth sen-

tence and show again that the third part completes the predicate and means the same as the subject. Give name predicate noun and ask for definitions of a predicate noun. Return to first sentence and see if the third part means the same as the subject. It does not. It will be seen that the word poems completes the verb wrote the same as the word poet completes the verb was, but there is a distinction between the two parts, the one belonging to the subject and the other not belonging to the subject. Poems is an object complement. Treat sentence five and sentence seven in the same way, giving the name object complement in each. Ask for definitions and distinctions.

IV. Application. Sentences 8, 9, 10 as reviewed in first seven. Have children construct sentences illustrating object nouns and predicate nouns.

480. Things vs. words.—*(a) What is the meaning of the maxim, "Things rather than words?" (b) Discuss, as bearing upon this maxim, the following quotation:* "The truth is, that the knowledge of external nature and the sciences which that knowledge requires or includes, are not the great or the frequent business of the human mind. Whether we provide for action or for conversation, whether we wish to be useful or pleasing, the first requisite is the religious and moral knowledge of right and wrong; the next is an acquaintance with the history of mankind."—Dr. Johnson.

(a) It is the appeal for real knowledge which is to be gained through the child's own actions, truths which the child can understand and use. A little girl repeated for me a poem in German. She did not know the meaning; she only had the words.

"This antithesis between words and things which constantly occurs in educational literature, from the sixteenth century onward, is not very exact. Sometimes the antithesis so expressed is really between the material world and abstract ideas. In this case the study of things which affect the senses is opposed to the study of grammar, logic, rhetoric, etc. Some-

times by *words* is understood the expression of ideas in different languages, and by *things* the ideas themselves. This is the antithesis of those who depreciate linguistic study, and say that it is better to acquire fresh ideas than various ways of expressing the same idea. Of course it may be shown that linguistic study does more for us than merely giving us various ways of expressing ideas, but I will not here discuss the matter. Besides the disputants who use one or other of these antitheses, many of those who find fault with the attention bestowed on words in education, mean generally words learned by rote, and not connected with ideas at all." Quick, Educational Reformers, p. 314 of Kellogg's edition.

(b) The quotation is not in harmony with the maxim. It places first the religious and moral knowledge of right and wrong, abstract truths which do not appeal to a child, and are, if dwelt upon, distasteful to him. But when these truths are discovered through "an acquaintance with the history of mankind," or through the "knowledge of external nature and the sciences"—real things—they are attractive and welcome.

481. Learning defined.—*(a) Explain this rule of Jacotot's: "The pupil must learn some one thing and connect everything else with it." (b) What is properly meant by "learning" a lesson in geography or history? By "learning" a tune? By "learning" a stanza of poetry? By "learning" to be punctual?*

(a) There is no such thing as an isolated fact or idea. It must be associated with something else. Correlation of subjects, which received a considerable amount of attention, was a branch of this rule. The "Compromise of 1850" means little to the pupil if he is not acquainted with the history of our country from the first appearance of the slavery question to the admission of California into the union. (b) A lesson is learned in geography or history when a pupil, in his own language, is able to give the facts in their right relations. A tune is learned when a pupil or class is able to give it with

ease and expression. It may be with or without the copy. A stanza of poetry is learned when the exact words of the author can be given without aid. Learning to be punctual means a reptition of the effort until it becomes a habit, when it is accomplished with ease.

482. Aims in penmanship.—*What are the desirable aims in penmanship?*

Ease, legibility and speed are three worthy aims. These are secured by maintaining proper position of the body, the pen and the paper; by practice of muscular movement in place of the cramped finger movement; and by following movement exercises instead of set copies.

483. Principles underlying habits.—*Name two principles underlying the formation of habits. Illustrate the application of each of these principles.*

Two principles underlying the formation of habits are plasticity and regularity of repetition. Habit is a fixed tendency to act, feel, or think in a certain way under certain conditions. In order to form a fixed tendency, we must give this fixed tendency exercise by repeating again and again and yet again that thought, act or feeling we wish to become a fixed tendency. I wish to wean children from the incorrect pen holding habit to the correct. My first lesson teaches the children how to hold pen. My second how to hold pen and use pen in that position. Each following lesson it is my duty to see that child always holds pen correctly. If this is done, in time there will be a fixed tendency to hold the pen correctly. If my lessons are a week apart I find the hand forgets its tendency more readily than if I had my lessons every day. I find five minutes each day devoted to writing forms better writers than twenty-five minutes a week in one lesson devoted to subject. Then I conclude it is better to have frequent regular short intervals than regular long intervals.

484. Induction, deduction.—*Distinguish between induction and deduction in teaching and state your views as to the appropriate uses of each.*

Induction is a process of reasoning which establishes a general rule, definition or principle from the knowledge of particular cases. I wish to teach that a noun is a word used as a name. I write five sentences containing nouns. I question. How is such a word used? It is the name of ——. I continue until all nouns have been so treated. Children give words used as names. At end of lesson tell children what words used as names are called. Children learn definition. A noun is a word used as a name. This is the process of teaching noun by induction.

Deduction is the process of reasoning by giving a general rule, definition or principle and applying it to particular cases.

I give the definition. A noun is a word used as a name. Children learn. I write five sentences on blackboard. Children find words used as names and call them nouns? This is teaching noun by process of deduction.

Induction is the process of finding out principles for one's self. It is experimental. It is speculative. Deduction is the process of taking opinions of others and verifying or applying those opinions.

Both kinds of reasoning are useful. Every well taught lesson should embrace both. Children should be taught by inductive-deductive process wherever possible. That is, teacher should by questioning, etc., elicit general rule from children and then give them plenty of opportunities to apply their own rules. The first part is inductive; the second, deductive.

485. Correlation, variety, induction, miscellaneous or simultaneous questioning, concrete methods.—*State (do not merely refer to) educational principle or principles upon which each of the following methods or devices may be defended:—*

(a) Uniting in one lesson history and geography.

(b) Having a lesson in arithmetic (grammar grade) followed by one in music or in reading.

(c) Presenting or having the children present a number of sentences, each containing a pronoun and its antecedent, before formulating the grammatical rule about the agreement of the pronoun with its antecedent.

(d) Teaching by giving questions to the class and requiring answers from one or more individuals designated after each question is put.

(e) Choosing the object rather than a picture of the object in a nature study lesson.

(a) The principle of correlation is founded upon the law of association of ideas and apperception; briefly stated, it is that quality of the human mind which makes it easier to keep a fact in a group of kindred related facts than to hold it as an isolated idea Correlation usually refers to association between groups as, the Delaware is a river in N. J. (geography); Washington crossed the Delaware (history). To have both these facts at the same time helps the memory.

(b) Voluntary attention develops out of involuntary attention. In small children the capacity to attend to one subject is limited to a few moments. If pursued longer fatigue is experienced. Therefore variety in the program of studies is a psychological necessity. The principle is, therefore, variety.

(c) The human mind is of such a nature that it is obliged to proceed from the "known to the related unknown." Principle: induction.

(d) Clear localization in consciousness is the first great necessity of securing memory. If the question is put after the child's name is called, this localization of attention is often missed. Instead of getting the question in mind the child thinks, "Oh, I'm not the one this time." Simultaneous questions preferred.

(e) The principle of "multiple sense impression" insists that an idea is best held in consciousness, when it is carried over as many roads as possible. To touch, handle, taste,

smell and see an object will be four times as useful to the memory of it as it would be to simply see it. Concrete methods require the thing itself whenever possible.

486. Individual notions, general notions.—*Define and illustrate each.*

(a) Individual notions are mental images, or ideas conveyed by sense impressions into consciousness. For instance, when a boy from the slums first goes into the country and sees a milking-stool he receives an impression which we call an individual notion.

(b) A general notion is the resultant idea, formed in the mind by analyzing many individual ideas of the same class, all of which have points of similarity.

(c) For example, the city child may have little more than individual notion of a rose. If taken to the country or into a rose-garden, he will soon compare red roses and white roses, little roses and big roses and white roses, and finally he will attain an abstracted notion which the word rose will call to his mind. This idea we call a general notion.

(d) My study of German was begun under a master of the classics. I was plunged immediately into the study of Schiller's Bell. Every word, practically, had to be looked up in the dictionary. For years the very mention of this masterpiece gave me a feeling of disgust. In order to get any appreciation of the poem, I should have had an introduction not only of the individual notions comprised under the term vocabulary, grammar and so forth, but some individual notions of German life, custom, bell-making and so forth.

487. Self-realization explained.

Self-realization may be defined as consciousness of harmonious development. In order to arrive at this goal, we must emphasize the two great principles of education, apperception and self-activity. In dealing with apperception we shall be obliged to consider the individual or subject of apperception; and the subject-matter to be apperceived. The study of the

individual will lead us to the consideration of many useful physiological laws, such as the doctrine of interest, the place of effort, the necessity of proceeding from the particular to the general, the culture epoch theory, and we shall thus work in harmony with the nature of the mind. The consideration of the subject-matter of instruction will help us to avoid one-sidedness. In order to attain true development all the powers of the mind must be exercised. We must, therefore, provide a curriculum rich in scientific, literary, aesthetic, institutional and religious instruction.

But we must never forget that these provisions will all be of no avail unless we secure the self-activity of the subject of our education. We can lead a horse to water, but we cannot make him drink, however good our intention, however fine the water, if he have no thirst. The interest of the pupil must be aroused in order to realize that happy relation between teacher and pupil, in which the activity of both is directed toward the same end.

488. **Principles of education.**—*State what you consider the fundamental principles of education.*

Read Chapter IV. There you will find attention, interest, apperception and self-activity under principles of education. There are other maxims or axioms but see if all of the following may not be considered under the four mentioned.

1. Observation before reasoning.
2. The concrete before the abstract.
3. Facts before definitions or principles.
4. Processes before rules.
5. From the particular to the general.
6. From the simple to the complex.
7. From the known to the related unknown.
8. Learn to do by doing.
9. Self-activity is the source of knowledge.
10. Never tell a child what he can find out for himself.

11. One thing at a time.
12. From the empirical to the rational.
13. Attention on the part of the learner is the condition of acquiring knowledge.
14. The mind must gain through the senses its knowledge of everything external to itself.
15. There is a natural order in which the powers of the mind should be exercised, and the corresponding kinds of knowledge taught.
16. The mind can exercise only a definite amount of energy at any one time. This amount varies with age, natural ability, and degree of development.

489. Discovery vs. being told.—It is better for a child to discover than to be told.

(a) Give two reasons (drawn from psychology) for the truth of this statement. (b) Illustrate a possible exception.

(a) Self-activity and interest are the two psychological reasons for the above statement. By self-activity is meant that form of self-direction which finds its primal impulse within itself. Every normal child is full of physical and mental action. If we can simply surround him with proper stimuli, his powers will develop largely without further trouble on our part. Applying this fact to education, we find experimentally that there is no real development without a great deal of this enlisted activity on the part of the child. We cannot arouse it, however, unless we secure his interest. By interest, in the psychological sense, we mean the "feeling side of apperception." In other words, he must feel that he wants to know or to do what we are trying to teach him to do. Spencer says, let the child face the difficulty before the solution is presented. He will then be interested in the solution.

(b) The exception to this rule is also found in the nature of the child's mind. The power of attention in young children is limited in time to a few moments. If the child is allowed

to puzzle over a difficulty too long, discouragement sets in, and interest is destroyed. For instance, if the meaning of a German sentence is not discovered, because of a forgotten idiom, there are two reasons why it is often best to tell it at once. It might incur too serious a loss of time to send the child to a large dictionary and even if this were not the case, it might divert his interest from some more important line of work, as the enjoyment of metrical form or rythm.

Another answer to 489.

(a) The following two principles of education based on psychology are reasons for the truth of the above statement.

1. The mind should gain through the senses its knowledge of everything external to itself.

2. There is a natural order in which the powers of the mind should be exercised and new objects of knowledge gained.

Both mean that all knowledge gained is based on sensation as sensation is the mind's only means of gaining a basis of knowledge of outside things. Then upon sensation we build.

(b) A possible exception is a case from which the result will be harmful and beyond repair. Ex. A child must not learn the result of exposure to disease results in the taking of the disease. Tell him and warn him.

Another answer on self-activity presents another phase of it. Following is the question: "*A teacher must not attempt to do what can be done by the pupil for himself.*" *Explain clearly in what respects this rule must be observed in dealing both with senior and junior pupils.*

Doing for the pupil what he can do for himself interferes directly with that end most sought for, namely, self-activity. The pupil's sense of power to act breeds desire to act, and any hindrance of it blunts the desire and stultifies the power. Matters of form which the junior pupil needs to learn are part of the mental equipment of the senior and no more to be done by the teacher than you would try to teach a healthy child of twelve how to walk, simply because you had not been there when he learned. For instance, a freshman class comes to me

with but a general idea that a paragraph talks about one side of a subject. I am working for unity. We take a paragraph, preferably expository and propositional. We read it and decide upon its theme. The children then select the sentence which first clearly expresses that theme and learn its name,—topic sentence. Then we find what relation every other sentence bears to this; what words in each carry back, directly or indirectly to it; and notice how the closing sentence applies or comes back to, as a summing up the subject of the paragraph. Having so done, we take a similar theme admitting of practically the same treatment, and with books open, and the general plan formed from the preceding study before us, we construct a paragraph on this model; repeating the process till the idea of unity is firmly established. Then the pupils can do that for themselves, and we are ready for the next step. Now my seniors are supposed to have the technique of the paragraph mastered, the work with them is of guidance more than of form. In studying Burke, the question of topic sentences merely comes up when a special discussion of it may explain more clearly his point, or when his masterly statement of his theme may serve as a model for their work.

In working out junior essays we often work out an entire plan in class, showing how to pass from part to part, and how to sum up. The seniors suggest various means of approaching a subject, various points of view, and my work with them is more in the nature of individual consultation on difficulties than of class direction as to exact work.

490. Reading: difficulties and remedies.— *What difficulties are likely to be found in a selection for grammar grade reading? Tell how such difficulties may be removed.*

Every selection in reading will have some of the following difficulties:

1. New or difficult words.
2. Allusions.
3. Figures of speech.

4. Words, phrases, or clauses out of the natural order.
5. Ellipses, especially of verbs.
6. Words used under poetic license in advanced grammar grades.

Manner of removing difficulties in the order enumerated.

1. For teaching words, see sections 173 and 500.

2–3. Teacher must be prepared in advance to explain whatever the child cannot find for himself. For allusions, give reference to pupils, if possible, and encourage them to look up the answers.

4. Lead pupils to arrange words, phrases, or clauses, in natural order; i. e., the order they would use in speaking. Then see why inverted or peculiar order is used in the selection. Is it for emphasis or climax?

5. Use manner similar to that in 4; i. e., lead pupils to discover contrast of elliptical expression and full expression. Principle of self-activity of pupils.

6. Teacher must explain and then have pupils notice such uses thereafter.

491. Pronunciation of shrimp.—*Explain in detail how to secure the correct pronunciation of shrimp and similar words.*

(a) By use of the phonogram method of dealing with words. Divide shrimp as follows: sh-rimp, give drill on rimp, then practice sh the teacher giving the model and the children imitating it. As soon as they can sound sh correctly put the word together and require the pronunciation of the word several times. Treat glad in the same way, g-lad.

(b) The mouth is open to the extent that a lead pencil might be inserted; the tongue is flat or nearly so upon the floor of the mouth and is slightly pressed against the front teeth of the lower jaw; as the sound is being given the mouth becomes partly closed. The sound comes largely from the throat. The palate enters largely into the process of giving the long sound of a.

Italian a the mouth is quite well opened and the opening is nearly round. The tongue is aloof from the floor of the mouth, being entirely free from every thing. The sound is made largely by the throat and farther down than the long a sound.

Sound of b. The tongue is flat upon the floor of the mouth and the mouth is closed. The sound is produced by a sudden outburst or opening of the mouth. The lips enter largely into the formation of the sound.

S as in sin. Mouth partly open. Tongue aloof from floor of mouth and extends near to the opening between the teeth. The sound is produced by forcing the breath from off the end of the tongue through the teeth.

Th as in this. Mouth partly open. Tongue against upper front teeth. At beginning of sound tongue remains stationary after which it suddenly drops down producing the final element in the sound. The sound is made entirely by the tongue and teeth.

(c) I should suggest dividing the words into syllables and pronounce each syllable after spelling it. Some preparatory work on syllabication should be given, however.

492. Economy of expression.—*State and illustrate briefly the points of a lesson intended to teach the following principles of composition:*

"*Use the fewest words needed to express the meaning intended.*" (*10*).

This principle requires clear thinking and clear writing. From the writer, it demands precision and perspicuity of style; for the reader, it means ease in understanding what is written. In other words it says, Speak or write so that you can be most easily understood.

Following is a lesson-plan:

1. Illustrative specimens having historical setting.
   "Don't give up the ship."
   "We have met the enemy and they are ours."
   "England expects every man to do his duty."
   "Unconditional surrender."

2. Conforming to the rule. Change the following to simple sentences:
   (a) Do you consider that this rule is impossible?
   (b) The license which you have secured is valid for three years.
   (c) You will be pleased when you pass the examinations.
   (d) The lesson is long but it is not difficult.
   (e) Lincoln was born in Kentucky. He lived in Illinois. He became President.
3. Application by studying Gettysburg Speech.
4. Practice in writing and speaking.

493. Composition criticised.

FROM TADPOLE TO FROG.

In the spring of the year, the frog lays her eggs. in the inside of the egg is a black speck. and in two or three weak little tadpoles come out of them, they have a round head, and a tail on one side, they are one half a inche long, they have pink threads by the side of the neck, then they begin to grow and grow, then two legs come out in the back of them, they join on to the tail, and in a few more days they get two more legs in the back of their eyes, then lungs begin to grow in the inside if them and the gills begin to shrinks and shrinks till the tadpoles lungs are all grown then the gills shrink all away, then there come another change the tadpoles tails shrinks and shrinks till at last it all shrinks away then the tadpoles is a perfect frog! If the mother frog lays her eggs in summer they will grow very soon, but if the mother lays her eggs in winter it will take an awful long time before they grow.

(*a*) *State three classes of faults in the above composition, and state at least one probable cause of each fault.* (*3*). (*b*) *A teacher corrects the mistakes and returns the composition to be rewritten. State with reasons, what faults you find in this method.* (*4*). (*c*) *Describe in detail how you would improve composition work along the lines of sentence construction.* (*4*).

(a) The first fault is in words; spelling, choice, concord. The cause is lack of effectual drill. The second fault is in sentences; capitalization, agreement of subject and predicate. It is evident that the child has not had sufficient practice in studying simple models and in constructing simple sentences. He does not know the sentence as a unit of composition. The third fault is in punctuation. This fault may be associated with the lack of knowledge of the kind of sentences from form of expression and also from a lack of knowledge of the sentence as a unit.

(b) This correction by the teacher deprives the child of the right of participating in a discussion of the general errors; it removes all possibility of self-activity at the time of the correction; and it puts the responsibility for correctness upon the teacher unless the teacher will take time afterwards to explain the difficulties to the children and to drill them upon the prevailing errors.

(c) Drill upon sentence structure should go back to the elements of the simple sentence. Drill first upon the simple sentence with modified subject and predicate. The one aim of this kind of exercise is the concord or agreement of subject and predicate. The sense of hearing will enable the child to detect ordinary errors in this concord long before he may be able to understand reasons. The next step involves a modified subject, and this practice will give the pupil an opportunity to use and to understand such modifiers as a, an, this, these, etc. The third step in the drill embodies the modified predicate. Pupils make many mistakes in not being able to distinguish the adverb modifier from the adjective modifier. The fourth step in the drill upon the simple sentence is a process of substituting phrase modifiers for word modifiers. It is a means of enlarging the vocabulary of the pupil. In all these exercises particular attention is given to capitalization, spelling and punctuation. This mastery of the simple sentence may lead to a consideration of compound sentences and complex sentences. In the former we have simply one more simple

sentence properly connected; in the latter we have word or phrase modifiers expanded into clauses. These last two kinds of sentences do not involve many difficulties in capitalization, spelling or punctuation, provided that these three essentials of correct writing are understood in relation to the simple sentence.

494. Composition criticised.

PUFF AND THE BABY.

When Puff was near the
baby here would wiggle
out of anyone's arms.
One day the baby was
lying on the sofa,
sleeping. Puff always went
Nearer, and, nearer
till he touched her nose.
The baby was crazy
for Puff. Puff was a little
terrier. Puff had long
hair.

(*Written by a pupil of the third school year.*)

(*a*) *State three classes of faults in the above composition.* (*3*) (*b*) *A teacher corrects the mistakes and returns the composition to be rewritten. State, with reasons, what faults you find in this method.* (*4*). (*c*) *How would you lead pupils to avoid each of the faults stated in answer to* (*a*)*?* (*6*).

(a) The faults in this composition may be classed under structure or form, arrangement and punctuation.

(b) See (b) under 493.

(c) The fault in regard to structure requires a study of simple models in prose and poetry. The writer of this little selection has a confused idea of form. A few models in prose and in poetry will impress the proper form under the law of contrast. The second fault, that is, arrangement, requires more practice

in the use of outlines. The analysis of a short prose model showing the author's plan or outline will lead the child to see that the author should have some definite plan in mind. While much cannot be expected from a third year pupil, still this practice in making a plan must have its effects in correcting the errors of arrangement as noticed in this selection. The matter of punctuation will be remedied as soon as the child is able to improve the structure and the arrangement of this composition.

495. Meaning of words: fortify.—*Illustrate two ways in which a teacher can lead pupils to understand, without using formal definitions, the meaning of the word fortify.*

The easiest method to make children understand the word fortify is to study it in its connection in a text-book. The word is likely to be found in the regular reading lessons in history or in geography. In all of these instances I should use a picture or pictures to give children the idea of the size, the shape, and the structure of a fort. The second means of teaching this word is by etymology. Its formation shows the meaning, to make strong. Then as an application compare fortify with fortress, effort, comfort, and force. See 173 and 500.

496. Methods: development lesson in reading.

METHODS.

Time, 3 hours.

1. The Chambered Nautilus—Holmes.

(Suggested by looking at one of those chambered sea shells called the Pearly Nautilus.)

Thanks for the heavenly message brought by thee, 1
Child of the wandering sea, 2
Cast from her lap forlorn! 3
From thy dead lips a clearer note is born 4
Than ever Triton blew from wreathed horn! 5
While on mine ear it rings, 6
Through the deep caves of thought, I hear a voice that sings:—7

Build thee more stately mansions, O my soul, 8
As the swift seasons roll! 9
Leave thy low-vaulted past! 10
Let each new temple, nobler than the last, 11
Shut thee from heaven with a dome more vast 12
Till thou at length art free, 13
Leaving thine outgrown shell, by life's unresting sea! 14

Ask and answer questions to bring out the meaning of each of the following: (a) wandering sea (2); (b) Triton blew from wreathed horn (2); (c) swift seasons roll (2); (d) thy low-vaulted past (2).

State syntax of each of the following words, and ask and answer questions designed to make clear the syntax of each of them: (e) cast, line 3; (f) it, l. 6; (g) thee, l. 8.

(a) T. What has been found on the shores of the Azores that led Columbus to believe there was land to the west? P. Bodies of men having a strange color, and branches from trees.

T. Have you heard of people getting messages in bottles picked up at sea? P. Yes. A few weeks ago such a bottle was found on the Maine coast.

T. Can we then truthfully speak of the sea as "wandering"? P. Yes.

(b) T. Who was Triton? P. Son of Neptune.

T. Why is he represented as blowing a horn? P. Because he was Neptune's trumpeter.

T. What kind of horn did he use? P. Some writers say he used a shell.

T. How was the horn adorned? P. With a wreath.

(c) T. Why did the writer use the word "roll" in speaking of seasons? P. Because they move one after the other without worry or noise.

T. Why are they spoken of as "swift seasons"? P. Because they seem to pass so quickly.

(d) T. A voice from the dead lips of Nautilus says to the poet, "Build thee more stately mansions, O my Soul!" and

later, "leave thy low-vaulted past." What do you think this means to the author? P. I think that it meant that he should turn from the small, narrow life of the past and plan better, higher deeds.

(e) "Cast" is a simple past participle, passive. It is like an adjective, because it modifies the noun "child," and like a verb because it names an action and is modified by an adverbial phrase.

T. What is the use of the word "cast"? P. It describes child.

T. How, then, is it used? P. It is used as an adjective.

T. What is the use of the phrase "from the lap"? P. It tells "cast" where.

T. It is what kind of a phrase? P. An adverbial phrase.

T. If "cast" is modified by an adverbial phrase, it is like what part of speech? P. A verb.

T. How, then, is the participle "cast" used? P. As an adjective and as a verb.

(f) "It" is in the nominative case, subject of the verb "rings."

T. What is it that "rings" on mine ear? P. "It."

T. What, then, is the case of the word "it"? P. Nominative, subject of the verb "rings".

(g) The word "thee" is in the objective case, objective of the preposition "for" understood.

T. Why does the poet say more stately mansions are to be built? P. For thee.

T. What, then, is the case of "thee"? P. Objective case, object of the proposition "for" understood.

497. Composition: method of teaching.—*Outline an approved method of teaching composition. Make your outline cover preparation, presentation, correction, etc.*

The two points which we shall keep in mind are (a) the paragraph and (b) the series of paragraphs showing logical unity or continuity.

I. Aim. Teaching the writing of the paragraphs. This we shall divide into several lessons. For the preparation of lesson I talk about great writers. Why have they written? We shall find that they had a desire to instruct or please others by their written thoughts and ideas. On what occasions may children desire to please or instruct others by their writing? This question leads the pupils to begin to think and they will soon see that the compositions written in school may be a source of pleasure. Thus that will arouse a desire to know how to write in order to please others. This interest comes into existence for each child.

The presentation of this lesson may consist of the study of a model. Care should be taken in the selection of the model. The one to be impressed in this exercise is that the topical sentence must be easily recognized. All other sentences in the paragraph must be so related as to prove the topic sentence. Lead children to find the topic sentence in the paragraphs and then trace the relation of each sentence to this topic sentence.

A second lesson may be introduced and brief references to the work of the preceding lesson. Then take up new paragraphs for discussion.

The third lesson may have for its aim to construct a topic sentence for a paragraph. A quick review of the two preceding lessons will make a good preparation. With the intention of taking bells as a topic begin to arouse thought by a few questions regarding the uses of bells. The children will readily mention church bells, factory bells, school bells, electric bells, etc. The various kinds will easily lead to a topic sentence, such as; Bells have many uses.

A fourth lesson may be a writing of a paragraph on the topic sentence, Bells have many uses. Before asking children to write what those uses are, try to impress them with the necessity of care in writing, in spelling and in punctuation. Do not give too much attention in this lesson to the uses of bells as brought out in the preceding lesson, but leave this matter

largely to the pupils so that each may see his originality in the scope of any nature of treatment.

A fifth lesson has for its aim to correct paragraphs written in the preceding lesson. The preparation will put the important points before the class by reviewing the meaning of a topic sentence, its use in the paragraph and the necessity of having the other sentences united in thought with it. Write the topic sentence on the board. Each child then compares his topic sentence with the written copy. Then have each child read his composition to test it for unity in answer to the question, Does this sentence prove that bells have many uses? Have child read paragraphs a second time for punctuation marks and capitalization. Have him see, too, if each sentence is expressed in the best possible form. The third reading is for the purpose of spelling every word correctly. Use dictionary to correct errors in spelling. In these three readings note that only one important principle is kept in the mind of the pupil during each reading. The number of readings in correction will depend upon the knowledge of the child and upon the work in composition of the previous grades. If the children write one paragraph well, the following lessons will deal with the sequence of the paragraphs in working for the unity of one paragraph. Pupils get their first lesson in the sequence of sentences and when they come to state the sequence of paragraphs it is a matter of applying the same principle in its broader application.

498. Dictation: faulty, good.—(*a*) *What are the proper ends of dictation work?* (*b*) *State faulty methods of conducting dictation lessons.* (*c*) *Describe in detail a good method of conducting a dictation exercise.*

(a) The proper ends of dictation work are correct forms of expression, punctuation, capitalization, orderly arrangement, spelling and writing.

(b) Use of long and unsuitable selections. Lack of attention in preparation. Careless correction of errors.

(c) Choose a subject suited to the mind and language of children. Through the spelling, reading and other lessons prepare for the exercise. Read selection as whole to class and dictation in phrases. Books should be used for this work and kept with care. The correcting is the hardest part of the problem. It should be done by the pupil to secure the greatest good ; but the teacher must look over the work later.

499. Homonyms and synonyms.—*How should homonyms be taught? Show how you would teach the synonyms suppose, hope, expect.*

Homonyms should be taught in sentences. Illustration : To teach the homonyms, *right* and *write*. The teacher puts on the board several sentences similar to, The boy holds the book in his *right* hand. She underscores the word to which attention is to be directed. After each sentence has been read and discussed, pupils are required to produce original sentences containing the word correctly used. The word *write* is then taken up and dealt with in the same manner. Then the teacher puts on the board a list of sentences with blanks to be filled in with one or the other of these words. The pupils fill these in. Then they are required to bring to class a certain number of original sentences in which these words are correctly used.

I should lead pupils to discriminate between *hope*, *expect*, and *suppose*, by giving them sentences containing these words correctly used, as, *Suppose* I should get a pair of skates as a present. (I know nothing about whether I shall get them or not but am thinking of the enjoyment I could have if I had them.) I *hope* to have a pair of skates. (Someone has hinted that I may get them as a present. I feel somewhat sure of them now but not absolutely so.) I *expect* to have a pair of skates as a present. (My father has told me that I am to have them. I am now sure of them).

With pupils not sufficiently matured to get the distinction quickly, I should follow the plan outlined for the homo-

nyms. With those able to discriminate quickly, I should follow with another set of sentences, then require pupils to fill blanks, explaining briefly, as I had done, following with the application to sentences of their own construction.

500. The meaning of words.—(*a*) *What means would you employ to lead pupils to understand the meanings of new words?* (*b*) *Illustrate by an abstract word, a concrete word, and a word having a figurative meaning.*

(a) With older pupils use of dictionary followed by discussion as to why certain meaning was chosen rather than some other. This method promotes self-activity, self-reliance and discrimination.

With younger pupils I should get at the meaning by questioning. Let your question be such that the child will have to make use of apperceiving group and thus the process will be one of apperception. Always have word discussed in a sentence as the remainder of sentence sometimes gives the cue. In the case of a concrete word the best way is to show object and tell child the name. If this is impossible, form concept in child's mind by calling up before his mind images of like things until you think he has a fair constructed image of thing for which word stands.

(b) There was a side-board in the room. Side-board. How many words? What does side mean? What do you then think side-board means? What would a board at side of room be used for? To lay things on. What else might I have at side of room to lay things on? A table. Might I call a table a side-board? Why? Then describe a side-board.

Abstract word.

The woman was charitable. Today a child fell in the school yard and John picked her up and brushed her dress. What would you say about John's act? It was kind. Mary gave half her apple to Edith. What might you say about Mary? She was kind. She was generous. A little lame girl has lost her father and mother and has no one to care for her. If

a lady takes her home and cares for her, what might you say about her act? She is kind, generous, noble. I have a new word for a person who helps another who is in great need. It is charitable. What was the kind lady? She was charitable. Children think and tell of cases.

Figurative word.

The groves were God's first temples.

What is a temple? It is a large building. What use is made of a temple? It is usually used as a church. Read sentence. What does sentence mean? It means that the groves were first used as churches. Why? How do groves resemble churches?

501. Misspelling.—*Account psychologically for misspelling. Describe, with reasons, what you regard as the best method of teaching spelling.*

Poor spelling is due to poor memory. Memory for spelling is poor because of some lack in one of the three or all three stages of memory.

In the first stage or fixing in memory the trouble is often due to poor method of teaching. There are various methods, sound method or repeating sounds of letters, method of learning the order in which letters follow by rote and methods by visualization. The last is the generally accepted method. It seeks to fix spelling by means of mental imaging. The emphasis then is placed upon helping the child to form mental images of words as they see them written in order that such mental image may be associated with word. The process varies.

Illustration.

Aim. To teach by visualization the spelling of the word fence.

Preparation. Mental concept of fence recalled. Children tell what a fence is.

Presentation. T. writes the word fence upon board. Children look at it and spell. Children asked to look again closely,

then close eyes and write with finger in air the word fence. Open eyes and again spell looking at board. Teacher covers with eraser. Children think how word looks and spell.

Application. Children write word at teacher's dictation. Use word in sentence.

Where poor spelling is due to second stage of memory or retention the fault is due to lack of exercise or hereditary influence. All brains are not equally retentive. The same is true of the third stage or reproduction. The teacher can simply see that child has concept for word, is properly taught to fix word in memory and is then given opportunity to use word.

502. Value of debates.

1. Vocabulary enlarged. Power to use words.
2. Alertness and quick decision. Appropriate word must be selected on the instant.
3. Mastery of grammatical principles through sound.
4. Pronunciation, enunciation, inflection.
5. Purity in tone and ease in gesture.
6. Self-confidence and enthusiasm.

503. Comparison in study of an animal.— *What are the advantages of the method of comparison in the study of an animal? Briefly suggest the points to be kept in mind in such an exercise.*

It is a good way to review, fixes it more clearly in mind, it brings out the likenesses and differences, it encourages self-activity and interest.

To conduct such an exercise.

1. Have specimens or pictures.
2. Compare the important likenesses and differences.
3. Be sure that both have been studied in detail previously.
4. Classify the points and write them on the blackboard.

504. Drilling discussed and illustrated.—*Explain the necessity of drilling, and show good ways and poor ways of drilling.*

Frequent drills in all teaching are an absolute necessity. By the law of repetition this idea is made prominent. Drills tend to elaborate what has been learned. They enable pupils to become independent and think for themselves. Their mental powers are enlarged. They learn to do truly by doing, and there is a stimulation about reviews that cannot be acquired in any other way. Students as a rule enjoy intellectual tests and look ahead to them with some degree of anticipation. Drills are thus an aid to good work and to discipline.

Good ways of drilling. By the Herbartian idea of summarizing every recitation. The lesson of the previous day should be reviewed before beginning the new lesson. Occasionally a whole recitation should be set aside for the review of a certain period. Both oral and written work may be required in review. For my own part I prefer oral drill if I am to cover considerable ground in a comparatively brief period.

Poor ways of drilling. It is a poor drill that occasions lapses of time between the recitation and any set time for drill. The drill should be persistent and constant. It is a poor drill that dwells upon review for one day and stops there.

A lesson in history should be summed up at the close of the recitation. The same lesson should be reviewed at the beginning of the next recitation. The following day just the salient points given with a review of the preceding day's lesson. About once a week the work for the whole week should be reviewed. It would be faulty to leave the lesson unsummarized for a week and then attempt to review it.

One method of review in history I have mentioned in the preceding paragraph. Another is by use of the topical outline arranged by the pupils themselves. They should be able to reproduce the outline and describe each heading of the outline.

In geography a lesson on cotton should be summarized by the pupil in a similar way.

505. Value of types.—*State briefly the educational value of types.*

Types are bases of the apperceptive process. When a pupil habituates himself to any type or form of mental activity, the mind will more easily adapt itself to all similar or related forms. It is economy of effort.

506. Types in geography: New York City.—*A primary pupil in New York City becomes familiar with geography, history, civics, social and industrial features of this city. Show how such knowledge can be used as a type in the study of other cities. What are the advantages of types in geography?*

A pupil who gains these various kinds of knowledge about his own city may use this knowledge as a type for the study of other cities. This type becomes a guide or a standard of measurement. This is in accordance with the principle of apperception; i. e., we gain or assimilate new knowledge by means of old knowledge. In studying the history of the reason for founding a city on the island of Manhattan and also for founding a city on the site of Boston we find these reasons different,—one for trade, the other on account of religious difficulties. If the reasons for the founding of New York have been illustrated by the pupils we can use the laws of comparison and contrast in studying about the foundation of Boston. The differences will strongly impress the child. Another step may lead to the study of Chicago, a trade center of the West. Here again there are differences. Then take up San Francisco. Eastern trade and the discovery of gold in California are stated as causes. Compare and contrast with New York and Boston. In this way we are going from home outward. We are gradually building an apperceiving group which may be of use whenever called upon. As in this one concrete example on one type in history limited to New York we may use a type study of any type in civics, geography or other institutional life. We are then teaching according to the following educational maxims:

1. From the known to the related unknown.
2. From concrete to abstract.
3. There is a natural order in which the powers of mind should be exercised and new objects of knowledge given.
4. One thing at a time.
5. From particular to general.

This mode of using topics as a basis for the study of a geography is advocated by McMurry, one of the best authorities in this country. The advantages of using type studies as a basis in geography are the following: (1) Types are keys to larger areas of geographical knowledge; (2) realities are studied; (3) thoroughly interesting and instructive; (4) the study of causes and causal relations; (5) basis of a series of comparisons; (6) from home outwards; (7) direct path to whole groups and sequences.

507. Teaching defined and illustrated.

"Teaching is bringing knowledge into due relation with the mind."—Hinsdale. (*a*) *Give two requisite qualifications of a teacher that are suggested in this statement.* (*2*) (*b*) *Explain the expression "bringing into due relation,"* (*3*), *and illustrate what is meant by it.* (*3*).

(a) Two qualifications are a knowledge of the subject-matter and ability to use adapted methods of teaching. In uniting these two qualifications the teacher will use her knowledge of psychology in adapting the subject-matter to the minds of the pupils.

(b) Bringing into due relation means arranging and presenting matter so that the child can and will comprehend it. The use of the formal steps of instruction would bring knowledge into due relation in accordance with this point of view. An illustration may be found in a lesson on a canal. Suppose the pupils have never seen a canal or a lock in a canal. Here description would not suffice. A picture or a model of a lock

would bring the matter into a realistic form so that the children's minds could comprehend it.

508. Renaissance.—(*a*) *What was the Revival of Learning? When and why did it take place? (3). (b) What were the subjects of instruction in the schools of Europe at time of the Revival of Learning?*

(a) The Revival of Learning is the name given to that old intellectual movement which became effective in the 16th century. No definite date can be assigned as the beginning of this movement, because the revival of learning must be viewed as the product of all the prior intellectual movements. The date 1453 is sometimes given to indicate an important occasion of the revival of learning. At that time the Mohammedans captured Constantinople. The Greek scholars in that city had the choice of Mohammedanism or death. They fled to Italy, and their writings and teachings influenced a renewed interest in the study of classical Latin and Greek. This interest in these two things spread over all parts of Europe. (b) The subjects of instruction in the elementary schools were those known as the seven liberal arts. The trivium consisted of grammar, rhetoric and logic; the quadrivium consisted of arithmetic, geometry, music and astronomy. See page 86, section 184, in the Epitome. The subjects of instruction in the Christian universities were law, medicine, philosophy and theology. See page 122, section 214, in the Epitome.

509. Outline on the Erie Canal.—*(a) Make a topical outline of the matter to be "presented" in a lesson on the Erie Canal. (5). (b) Describe three ways in which the knowledge gained in this lesson may be "applied" by the pupils. (3).*

This question requires the use of the Herbartian formal steps of instruction, viz: Preparation, Presentation, Application.

(a) A suitable "preparation" for this lesson is a discussion of the means of transportation in the early days of New York

State. They were rivers, trails, turnpikes, railroads and canals.

PRESENTATION.

1. Usefulness of such a canal.
   (a) To the industries of the State.
   (b) To the North West.
2. Natural conditions favorable.
   (a) Short route from Lake Erie to the Hudson River.
   (b) No great barriers to construction.
3. The construction.
   (a) Favored by Governor Clinton.
   (b) State aid.
   (c) Local aid.
   (d) Progress to completion.

APPLICATION.

(b) Make an outline map showing termini of Erie Canal and principal cities along the route. Trace shipment of grain from Chicago to New York by water, incidentally studying grain elevators at Buffalo. For local uses, trace eastern and western shipments of flour from Rochester, salt from Syracuse, and hops from Utica.

Compare railroads and canal in regard to cost, rates and time of transportation; and notice especially the growth of cities along the Erie Canal. These causal relations will show the benefit of the Erie Canal to agriculture, manufactures, and commerce.

510. Outline of topics on Hudson River: reasons.—*Prepare a topical outline of a geographical study of the Hudson River, giving reasons for your arrangement of topics.*

Review surface of eastern New York.

I. Principal elevations.

II. Direction of slopes.

III. Position of river.
  1. Source.
  2. Direction.
  3. Mouth.
IV. Branches: source, direction.
V. Comparative size.
VI. Uses: northern course for lumbering, manufacturing; southern course for commerce, travel.
VII. Important places along its banks.
VIII. Influence on New York City.
IX. Influence on the West.
X. Place in history. Discovery by Hudson; Patroons; first steamboat; line British wished to hold in Revolutionary War; later history; first canal.
XI. Place in literature. Called the American Rhine.

The pupil is already familiar with the surface of the State, and as the character of the river depends upon the surrounding slopes, a review of this topic prepares for a new one. The position of the river is prepared for, and this should be followed by its comparative size and uses.

The fact that there is considerable traveling on the river leads to the location of places of interest and importance.

The subject could not well be classed without connecting it with history and literature.

For correlation on this topic, see page 8.

511. Topical method applied to New York State.—*Give the advantages of the topical method. Mention six topics, in order, in the study of New York State.*

The topical method promotes self-reliance and logical thinking. As connected discourse is necessary in the expression of the thought, every pupil will learn to think while standing; to enlarge his vocabulary for immediate use; to improve his pronunciation and inflection; to master the principles of agreement and concord through sound; to overcome self-consciousness; and, in brief, to develop his own powers through use.

New York State. Location; importance and approximate area; mountains; rivers and lakes; chief mineral and agricultural areas; chief cities; exports and imports; means of transportation.

512. School virtues and evils.—*Enumerate five school virtues and five school evils, and prepare to show the relations of habit to each.*

Five of the most important virtues developed through the school are obedience, or respect for authority, punctuality, order and system, intelligence and efficiency.

The school evils most to be fought are:

(1) The divorce of theory and practice or verbalism, by which is meant the teaching of rules of grammar in such a way as to make no change for the better in the pupil's speech; the teaching of mathematics without application to practical problems, etc.

(2) The unnecessary crushing out of individuality.

(3) Dishonest work.

(4) Cramming.

(5) Cliques.

The teacher can soon tell which of the children under her care have been trained to habits of obedience in the home. For these she has comparatively little to do but supply proper stimuli for development. To inculcate the habit we must "put together the things we wish to go together, and keep apart those we wish apart."—(Thorndike.) I believe, with the author, that we must depend more on reward than on punishment for developing this habit. When we get obedience, we must praise it; when we punish disobedience, we must be careful in the association found. Keeping after school for trivial offenses is apt to breed a dislike of the school. The same principle must underlie the development of the virtues of punctuality and order. The principles of vividness of vocali-

zation and repetition are the basis for habituation. We should therefore try to bring before the mind of the child a clear notion of the ideals of punctuality and order ; and then drill upon them, being careful to supply as far as in us lies the element of resulting satisfaction whenever the desired reaction takes place.

With intelligence and efficiency we work on the same lines, but on a higher plane. Here we must try to put the habits of thought into well organized systems and strengthen the cross-line between the systems.

In dealing with the school evils we often must begin with our own mentality. If we are strangers in the community in which we teach, our first business will be to make ourselves masters of the environment, bring our illustrations and applications into close touch with this environment in order to avoid verbalism.

The proper treatment of the individual lies likewise in our own hands. If he is timid, awkward, but still mentally active, we must try to divert his attention from himself, rather than scold him. That is, we must associate the idea of the subject matter to be recited with the satisfying result of approval, rather than associating unkindly criticism with effort.

To substitute the habit of honest work for dishonest work, we should associate quick detection with dishonesty ; pride of independence with honesty.

Habits of cramming and cliques must be treated with the greatest care. To overcome cramming and substitute the habit of every day work, we should associate the idea of examination with former questions as opposed to memory tests as far as we can. Cliques are best avoided by introducing some general organization to which all pupils may belong, and associating with the ideas of social intercourse high democratic ideals, as opposed to narrow, limiting, feverish relationship.

ANOTHER ANSWER TO 512.

Five school virtues are:

1. Obedience.
2. Promptness.
3. Honesty.
4. Industry.
5. Studiousness.

Five school vices are :

1. Dishonesty.
2. Idleness.
3. Untidiness.
4. Tardiness.
5. Disobedience.

In the five virtues habit tends to make each automatic, not needing the power of the will for decision. The obedient child does not decide each time when called upon to be obedient that he will or will not do as he is told. He has formed the fixed tendency to act in a certain way under special conditions and he keeps on doing so once the habit is formed. In fact, the more often he performs the act, the less difficult it becomes. In the same way the child who has formed the habit of doing things promptly does so without effort. So on through the list.

With the vices, let us take one as an example—dishonesty. A child has poor moral influence at home. He soons finds in school that there are ways of getting things done by cheating. He does the thing once, is not caught. He proceeds. He finally forms the habit of cheating whenever possible. This leads to other vices, such as lying. The child lies the first time when caught copying his number work. He lies a second time and soon he forms the fixed tendency to lie every time. Thus the vicious habit becomes stronger. It is the duty of every teacher from first grade up to watch out that child gets no opportunity of cheating so that the pernicious habit may not be begun. The average child placed under efficient teach-

ers (and granted that the home influence is not bad) right through the course will not form the habits of vice. We find school vices wherever there is a poor control. Where there is poor control, there can be no discipline in the sense of leading on to personal control.

513. Serviceable memory.—*What are the characteristics of a serviceable memory? How far and by what means may it be cultivated?*

Memory has three stages:

1. Apprehension or fixing in memory.
2. Reflection or keeping in memory.
3. Reproduction or bringing to consciousness when needed.

In order that a memory may be serviceable, attention must be paid to all three stages. Each is of importance.

Apprehension is of great importance. Sense importance is its fundamental law. The stronger the impression made upon the senses the greater will be the power of retention and reproduction.

If the first stage has been well begun, retention, or keeping in memory, is not apt to be a hard stage—that is the thing fixed is not likely to sink so far into sub-consciousness as to be impossible of recall. The third stage presents repetition of reproduction as a necessary adjunct of a serviceable memory. As the race loses power of any faculty which remains unused, so the mind forgets the thing fixed and held in memory if that thing is not called to consciousness for use at various intervals. For instance, I once fixed or impressed in memory a certain Latin word. Memory held that word in subconsciousness ready for use. I neglected to bring to consciousness after a certain number of repetitions. I now have forgotten the word.

A serviceable memory then is a memory which is given exercise and plenty of it. All the work of school and life tends to cultivate memory.

514. Jacotot.—Jacotot said, "All human beings are equally capable of learning. Everyone can teach; and moreover, can teach what he does not know himself." *Discuss this excerpt.*

That all human beings are equally capable of learning is not true. There is great diversity in the quality of minds of different persons. This principle has been recognized by prominent educators from Plato down. Plato's definition of education contains this principle. "To give to the body and soul all the beauty and perfection of which they are capable." One who teaches children of same age, same grade, same advantages, finds marked diversity in character of capabilities.

That everyone can teach, which here means cause to learn, is not true in every subject. Not true where technical knowledge is required, as in music and natural sciences. A child makes a drawing of a cylinder. Unless I know the laws of perspective I cannot criticise. If I do not know the varieties of trees I cannot teach them. If I do not know how to perform an experiment to illustrate condensation or do not know the laws I cannot teach condensation.

515. Walker on old and new education.

"A generation ago it was the accepted theory of educators generally that instruction, to be most effective, should cross the grain of the youthful mind; that if disinclination were shown towards any particular study, the teacher should catch at this as his welcome clue; and that the scholar thereafter should be practiced and drilled for his mind's good, against his indifference, his dislike, and even his repugnance until he should learn to do well and freely that for which he had originally the strongest inaptitude. Not only a better observation of life, but the study of physiological psychology has led the educators of today to a widely different view of the office of instruction." (Francis A. Walker.)

What is this widely different view? Give, with reasons, your judgment as to the comparative soundness of the two views, showing the bearing of each on interest and will.

The widely different view is that we should let interest be our guiding star. The old view regarded all learning as disciplinary and the harder and more repugnant the task, the greater was the disciplinary value. We of today take interest for our guide. Where you have interest you also have volition for we wish for that in which we are interested and will to do it. Interest does not mean that all tasks must be made easy; on the contrary, the task may have been such that it might not have been accomplished under the old plan while interest overcomes all obstacles. Under the old plan the work was drudgery; under the new the drudgery is not perceptible to the mind while the attention is fixed upon not a many-sided knowledge, but a many-sided interest. Where the interest is, the knowledge follows as a matter of course. It is better not to give a child universal knowledge but rather a desire for knowledge. It is this interest and desire to attain certain aims that have made the work of Marconi and Edison possible.

516. Hinsdale's definition of education discussed.—"Teaching is bringing knowledge into due relation with the mind."—Hinsdale. *(a) Give two requisite qualifications of a teacher that are suggested in this statement. (2) (b) Explain the expression "bringing into due relation," (3) and illustrate what is meant by it. (3).*

(a) The teacher must know the subject to be brought into due relation with the pupils' minds and (b) must know the nature of the mind addressed. The expression, bringing "knowledge into due relation", refers to the principle of apperception. New knowledge may only be assimilated by means of old related knowledge already stored in the mind. On a visit to Eton last summer, a youthful guide informed me that the statue in the centre of the quadrangle was the figure of Charles VI. I looked at him in amazement. He had evidently said this a great many times and appeared surprised at my scrutiny. But my English history was not so rusty as to pass this information without a challenge. After one or two

better directed historical remarks, I said, "Oh, you mean Henry XI." Now, this boy had no basis for his historical information regarding Eton. There was no apperceiving mass for the story he had learned for practical purposes to reach out and take it into hospitable quarters.

517. Symbolism.—*State the meaning of symbolism in education.*

The practical meaning of symbolism, as the term is used in elementary education, corresponds closely with personification. It is the imaginative process of ascribing human life and human affections to plants, animals and other objects which cannot possess such life and such affections One phase of symbolism is seen in the myths and fairy tales which form a large part of the early primary instruction, and another phase of it is in ascribing the qualities of companionship to the various plants, flowers, trees and other objects in nature study. The adverse criticism of this use of symbolism is that it perverts the imagination. Children are learning what they must unlearn in later life. In answer to this adverse criticism it is held that the use of symbolism is strictly within the natural limits of the child. The imagination is simply getting the kind of material which it is able to appropriate in that stage of development. Such imaginative material is not applied at a later stage when the reasoning and memory become stronger.

518. Ideals in education.

In order to form an ideal of education we are forced back upon the experience of the past for a basis of judgment. What shall we select out of this past experience as the fitting heritage of the individual? Butler says the individual is entitled to his "scientific, literary, aesthetic, institutional and religious inheritance." The spiritual inheritance of the race will fall under these divisions. One can imagine an individual possessing a large share of the first three, and still falling far short of the modern ideal education. But, in order to

possess really his institutional and religious inheritance, he must have experienced many varied relationships with his fellow-men. Consequently we find Dewey emphasizing "social stimulus" or the adjustment of the individual to his environment. But this environment is the product of race development in successive epochs. The child passes in a general way through the same stages. Consequently true education will seek to give the individual the best products of the race at a time when his development is best suited to receive them. In order, however, to arrive at this goal, something more is required than merely to give the child his proper mental food. He must be enlisted in his own cause, and must react in a healthy way upon the stimulus presented. In other words, we must arouse him to that conscious direction of his own powers, which we call self-activity. Then we shall get that happy harmonization of interest and effort which produces self-realization. When self-activity is once aroused in the lines of a many-sided interest, a physical, intellectual and moral interest, we shall certainly have a person of character and efficiency. Such a one ought to fulfill Spencer's ideal of "complete living." He ought to be able to provide efficiently for his direct and indirect self-preservation; perform his duties properly in the rearing of the young; act the man's part in the duties of citizenship; and finally, be fitted for the enjoyment of a noble leisure in the pursuit and contemplation of the aesthetic achievements of the race.

519. Discipline of consequences.—*Spencer and Rousseau stood for the discipline of consequences. Explain, illustrate, and then justify your opinion of such punishment.*

The discipline of consequences, as formulated by Spencer and Rousseau stood for natural punishment. For instance, to inculcate the habit of punctuality, Spencer said the dilatory child should lose the walk or the theatre rather than have others wait for him and scold him. I believe in such punishment as far as the best good of the child may permit it. To

let a child fall in the water, with no possible means of avoiding drowning would be in strict obedience to this principle, but not in accordance with my own view of judgment. However, I think we should observe this principle as often as possible. For instance, I was recently brought to face a problem of discipline in my own classroom. The pupils have the privilege of speaking in a low tone between recitations. Two teachers complained to me that the pupils abused the privilege, were noisy and disorderly at these times. One of the teachers advised me to keep them in after school. I thought of Spencer and decided the natural consequence was the removal of the privilege. My principal objected that there was no one there to enforce the law. I said I would personally see all the teachers entering my room, inform them of the decree, and ask for reports. It is working very well, and I expect to see a habit formed during this discipline, which will do away with the old habit of disorder when the privilege is restored.

ANOTHER ANSWER FOR 519.

The discipline of consequences would permit the child to suffer the natural consequences of his offense against law. If he deliberately breaks a window in his room, let him catch cold from sleeping in it. This thing is excellent, in that it rests on a foundation of justice which every child acknowledges, and may be used with good results,—just as far as it does not endanger the mental, moral or physical health of the child, for which its parents and guardians are responsible. That would be a case where one stage of the culture epochs would better be left out, the one where men learn by experience what to avoid.

It will work admirably to leave the care of a school, which has the right spirit, the punishment of a child proven guilty of deliberately injuring the school community by defacement, pilfering, etc. He who will not obey community law is outside community privileges.

But there are cases where the action of the principle is not immediate enough, or too disastrous to the child's well-being, to permit its being applied. I had in one class a boy remarkably bright but as remarkably lazy. He got from recitation what others got by long study; and in reviews, he had by no means perfect knowledge, but better than some poor faithful plodders who had dug out all they had by sheer manual labor. It was the same in every class and at home. He had been allowed to be lazy at home, in fear of injuring his health. Not a vicious boy, but—lazy; and a bad example for all and a discouragement for many. The natural punishment would have been to let him go with his half-used faculties, his powers dying from inertia; but that would have been a wrong beyond estimation. Accordingly after a long talk with the father, I told the boy that every day his work was not prepared he would work in my room until he had done just twice the amount; and after school, if he wouldn't work in my time, he must work in his room. Three weeks of work convinced him that I meant it. Now, he is in my senior class, he hands in his outside work on time, but usually with a twinkle of the eye, for he had wit enough to appreciate fully the humor of the situation. Here was a case where two teeth came in payment for one,—and it worked.

520. Self-activity illustrated.—*Show specifically how to utilize the self-activity of pupils in the different elementary studies.*

1. Self-activity of children is one of their marked characteristics. The teacher must not repress this, but seek to divert it into proper channels.

Thus in a reading lesson the pupils should change their position, i. e., part of the time they may stand, read individually, then collectively. Have the pupils make gestures.

In geography, while preparing the lesson, let the pupils make maps to show products, industries, race, distribution, etc. Let them make models to show surface features.

In language work, pupils enjoy writing for the purpose of giving pleasure to others. In this work have some composition written on the board, and corrected, while others may be read in class.

In spelling, children enjoy making words from the letters of another word. Spelling matches arouse the feeling of emulation. This causes the pupils to put forth their best efforts. I have had classes that would rather have a spelling match than a good game of ball.

2. Another answer.

In reading, by giving certain written work to be done in the preparation of the lesson.

In spelling, by requiring the writing of the words both in the preparation of the lesson and in the recitation. By having original sentences written in which the words are used.

In arithmetic, by having problems carefully worked out, diagrams drawn, quantities measured, etc.

In geography, by having land and water forms molded in sand, maps drawn, product maps constructed, charts made, scrap books made, etc.

In language and grammar, by reproduction and original composition work, and written analysis, diagrams, etc.

In nature study, by having soil prepared, seeds planted, plants cared for, collections made of insects, flowers, minerals, etc.

In history, by having maps and charts made, sketches copied, note books kept, original researches made, etc.

In all subjects, require certain work and, at the same time, suggest in various ways, other work to be done voluntarily to cultivate the habit of spontaneous independent action on the part of the individual.

521. Analysis in percentage.—*Make a practical concrete problem in percentage and solve it by analysis.*

A man by selling a house for $2500 gained 25% of the purchase price. What did he pay for the house?

Analysis: Since he gained 25% of the cost, the selling price must have been 125% of the cost. Therefore $2500 was 125% of the cost. 1% of the cost was $\frac{1}{125}$ of $2500, or $20; and 100%, 100 times $20, or $2000. Ans.

Use of common fractions in percentage.—Construct a concrete example in percentage and solve it by the method of common fractions.

A farmer bought a horse for $100 and sold it so as to gain 25% of the cost. What was the selling price?

Solution: 25% of the cost = ¼ of the cost.

¼ of the cost = $25.

$100 + $25 = $125, the selling price. Ans.

522. Percentage: analysis, formula, algebra.—(*a*) *State a simple problem in which percentage and rate are given to find base, and solve it* (*1*) *by analysis,* (*2*) *by use of formula,* (*3*) *by algebra.* (*b*) *State with reasons at what points in the elementary schools you would use each of the above modes of solution.*

(a) A man received as his commission $315 for selling goods at 3 per cent. What was the selling price of the goods?

(1) The agent receives 3 per cent of the selling price for his services. $315 is the amount he receives; therefore, $315 is 3 per cent of the selling price. If $315 is 3 per cent of the selling price, 1 per cent of the selling price equals one-third of $315, or $105, and 100 per cent of the selling price equals 100 times $105, or $10,500. 3 per cent equals $315. 1 per cent equals one-third of $315, or $105. 100 per cent equals 100 times $105, or $10,500, selling price.

(2) P divided by R equals B. .03 equals R. $315 equals P. $315 divided by .03 equals $10,500, or B.

(3) x equals Base. 3 x divided by 100 equals $315. 3 x equals $31,500. x equals $10,500.

(b) Use analysis in the first work with percentage, for the child is able to see that if 3 per cent equals a number, 1 per cent will equal one-third of it, and 100 per cent 100 times this result. This method is but an application of earlier reason-

ing, and the work is done without difficulty. The method may be used in the fourth year in school, and perhaps earlier. I have little use for the formula. Pupils in the two highest grades in the elementary school should be able directly to find the base by dividing the percentage by the rate expressed decimally. I feel that the formula is a hindrance if taught earlier in the grade, on account of a pupil in our graduating class last year, who came to us from a private school and was hampered by trying to think what formula fitted the problem in hand, instead of finding out what he had and using it. If there be time to solve problems in as many different ways as possible, I should use the algebraic form in the last year, but feel it is not essential.

523. Questioning: consecutive, promiscuous, simultaneous.— *Name three kinds of questioning and state the advantages and disadvantages of each.*

1. The consecutive method of questioning following the order of the roll or the seating in the class room. The advantage of this method lies in the fact that it is not necessary for the teacher to call the names of the successive pupils and thus time is saved for the teacher and the class. The disadvantage in it lies in the fact that each pupil knows when he must recite, and when he has recited feels secure in thinking that he will not be called upon within a limited time. The latter condition may tend to lack of attention and interest in the work of the recitation.

2. Promiscuous method of questioning is that in which the teacher does not follow order in seating or the order of the roll, but calls from different parts of the room as his fancy dictates. The advantage of this method is said to be in the fact that no pupil knows when his turn will come and so all are presumed to be giving attention. The fact that a pupil has recited does not justify him in thinking that he will not be called a second or a third time. The disadvantage in the method lies in the loss of time in calling the names, in the exemption of certain

lazy pupils, and in the probability that the best ones in class will be called upon more than those who do not show the same amount of eagerness to recite.

3. Simultaneous method of questioning is that in which questions are asked from the whole class and after pupils are given time to think what the answer will be. Then the whole class or one pupil may answer the question while the others are thinking or answering with him. The advantage of this method is said to be that the attention and the interest of all pupils are held during the time of asking the questions. In those cases where it means concert recitations it is possible that a large number of the pupils are not giving the required thought, attention and answers as the general tendency would seem to indicate.

524. Questioning: faulty questions criticised.—*Criticise each of the following questions as introductory to a development lesson or an object lesson: (a) What do you think I saw on the way to school this morning? (b) What do we always find when we come to school in the morning? (c) Why do the claws of a dog make a noise on the floor, while those of a cat do not? (d) Who can tell me anything about this (holding the object in view)? (e) Is the bill of this bird long or short?*

(a) This question is practically a universal question. The normal mind should have seen hundreds or even thousands of objects on the way to school in the morning. Such a question has no educative element in it. It does nothing to lead the child toward definite thinking or consistent reasoning.

(b) This is a very indefinite question. While not so broad as (a) still this question leaves too large a choice and the only result can be that of guessing.

(c) This is a telling question and so it relieves the necessity of thinking. It would not be much of an effort for the average child to surmise the effect upon prey when the approaching noise is sufficient for a warning.

(d) This general question is another invitation that does not cause pupils to work toward definite and accurate thinking. It puts no responsibility upon any member of the class nor does it limit any child to an answer that can be a contribution to the development lesson or the object lesson. Logical thinking is not stimulated by it, nor does the question tend to bring knowledge into due relation with the mind. Some specific questions should be asked to introduce a lesson of this kind.

(e) This question allows a choice of answers and so 50% of the answer is given by suggestion. If one guess does not bring the correct answer the other must be the correct answer. Such a question does not stimulate thought.

525. Methods, advantages and disadvantages: five applications.— *State the advantages or disadvantages of each of the following methods: (10). (a) Indicating before a question is given, the pupil to be called on. (b) Looking fixedly at one who is answering or reading in class. (c) Using objects during a review. (d) Having pupils in class formulate the problems in arithmetic. (e) Having pupils correct one another's spelling exercises.*

(a) The advantages must be considered exceptions to the general pedagogical rule. A timid child or a child who is likely not to hear the question on account of deafness, inattention or disorder may be aided so as to produce an economy of time. The disadvantage lies in the fact that such a method of questioning permits all other pupils to be inattentive if they are inclined that way. Those not called on may feel that the one who has been called will be held responsible for the answer to that question. The teaching process should generally be considered a social process involving the teacher and all of the pupils. Every act of instruction should be presented in such a way that every child will feel a responsibility for contributing something to the answer.

(b) The disadvantage is embarrassment. If the teacher is not strong in government the one who is reciting will have

more attention than the recitation demands and certain other pupils will be given an opportunity to waste their time. The advantage lies in the encouragement that may be given to a pupil who needs the strong personality of the teacher.

(c) The advantages can be found only in rare exceptions. If a child is defective or if a child has been absent unavoidably the teacher may be justified in presenting an object during the review, but even in such cases it would seem better to give personal instruction to those few pupils rather than to take the time from the majority of the class. In general the use of objects during review will relieve the pupils from the necessity of all recalling the lesson as originally presented. In other words, the use of the object gives each child an excuse for not using his own activity.

(d) The advantages are interest, co-operation and the feeling of class responsibility. It may be an incentive to individual effort and the use of the problems so presented may be held as a stimulus toward the attainment of a recognized standard of excellence. Such recognition may be silent or it may be announced publicly as a recognition of the good work done by the pupil in making the problems. The disadvantage is not evident excepting in the abuse of the process. A weak teacher may rely upon that means of securing problems for advanced work and for review while a good text-book is set aside.

(e) The disadvantages might be considered under the head of collusion; or under the charge that such criticism is made by an incompetent critic, and the pupil who has been unjustly criticised feels that a personal injury has been done to him. This latter argument need not be accepted if the teacher will always offer pupils the right of appeal. The advantage of this method is economy of time for the teacher and an illustration of self-criticism, self-activity, and self-realization in the exercises.

526. Same topic as 525; five more applications.—*State briefly the advantages or disadvantages of each of the following methods:* (10) (*a*) *Questioning pupils in rotation.* (*b*) *Re-*

peating a question. (*c*) *Paying most attention to the smartest or dullest pupils in a class.* (*d*) *Breaking off an answer before completion and asking another pupil to continue.* (*e*) *Compelling pupils to write a certain number of times words that they have mispelled.*

(a) The advantages are a saving of time in not having to call the names and a feeling of alertness under the consciousness of the paproaching time to answer. It is possible to arouse a creditable activity in a class by this rapid and systematic method of questioning. The disadvantage is said to be in the fact that a pupil knows when he has to recite and that he will not give his attention until he knows that he must answer in turn.

(b) The custom cannot be sanctioned as a safe rule. It is a waste of the teacher's time and energy and it is an open invitation to inattention on the part of the pupils. There is, however, the advantage of putting the question so clearly and so emphatically that defective pupils may be given a chance to grasp the full meaning of the question ; and again the repetition gives the teacher an opportunity to impress the main points in the lesson. This last view presupposes an attentive class and an interesting presentation of new work.

(c) This process in teaching has many disadvantages unless the class be divided into groups according to ability. If most of the attention is given to the smartest pupils the average pupils and the dullest pupils are going to be unable to keep up with the best division of the class. Should most of the attention be given to the dullest pupils then the other two divisions are likely to lose interest because they already know the work that the teacher is presenting to the dullest pupils. It is suggested that the class be divided into three divisions or groups so that two groups may be working at the board or on paper under other assignments while the teacher is directing her attention to one group in particular. Then the teacher is justified in giving most of her attention to whatever group she is teaching during that period.

(d) In nearly all school work the aim of teaching is to cause the pupil to form correct habits of persistent thinking. Such thinking demands poise of body and mind and time for the consideration of the matter presented. Breaking off an answer before completion is likely to interfere with continuous thinking and so the practice cannot be commended. It may have an advantage, however, in causing certain pupils to remain attentive at all times during the recitation period. The matter of deciding whether such breaking off is harmful or not depends largely upon the pupil who has been interrupted.

(e) Writing mispelled words a limited number of times during the process of learning to spell those words has the sanction of many educators, but when the process is made a punishment for the mispelling the penalty causes the child to forget the value of the learning process and so he comes to dislike the subject and the method. The disadvantages are so strong that the process should be condemned.

527. Battle of Saratoga decisive.—*Tell how a teacher may build up a history lesson from the following question asked by a boy in class: "What if Burgoyne had won the battle of Saratoga?"* (9)

The importance of any battle must be measured by its effect upon the contending armies. I should prepare a lesson upon the Battle of Saratoga by making the following outline to show the plan of the campaign by the British :

1. The first objective point in the Revolutionary War was Boston. General results not decisive.

2. The second objective point was New York City.

3. The aim of the British was to control the water connection with New York City ; to hold the St. Lawrence River; and then to establish a line of defences from the St. Lawrence River to New York City by way of Lake Champlain and the Hudson River. By opening this way the strength of the colonists would be weakened by separating New England from New York and the other colonies.

4. If Burgoyne had won the battle of Saratoga the principal aim in the campaign of the British would have been satisfied. Burgoyne's defeat at Saratoga left a free connection between New England and the other colonies.

5. Aside from the point of connection just mentioned the victory at Saratoga influenced the French to aid the Americans against the British. This aid on land and sea was a decisive factor in the later results of the war.

In a lesson of this kind I should follow a map or have pupils make a progress map to show the locations of Boston, New York, the St. Lawrence River, Lake Champlain, Saratoga, the Hudson River, Trenton, Princeton, Pennsylvania, and Yorktown. A general map of this kind can indicate the progress of all the campaigns.

528. Methods: question, conversational, lecture.—*To what class of pupils is the question method suited, (b) the conversational method, (c) the lecture method?*

The question method is suited to all grades of pupils. The primary work must be by means of questions and answers; and in the last grade of the grammar school, exact questions are considered the highest test of efficient teaching. The conversational method is especially intended for the first year of school work, but its use may be retained through all the elementary grades. It is valuable in all private teaching, in personal criticism, and in all exercises where mutual interest of pupils and teacher is involved. The lecture method is not adapted to elementary grade because it presupposes the power to gain knowledge largely through the sense of hearing, and elementary pupils have not advanced to that degree of mental mastery. Its specific use is in advanced work under university organization.

529. Self-reporting system criticised.—*Give two objections to the self-reporting system in conduct and scholarship.*

Self-reporting tempts pupils to be deceitful and untruthful; guilty pupils go unpunished; innocent pupils have to share a

bad social spirit; the teacher's standard of judging the whole class becomes inaccurate and unfair. In brief, this system does not develop *proper habits for character.*

530. Assignment of lessons criticised.—(*a*) *Criticise each of the following ways of assigning advanced lessons, and in each case suggest a proper assignment:* (*1*) (*In history*) "*Study all about the first voyage of Columbus and be ready to tell me what difficulties he met in getting aid, and everything of that kind.*" (*2*) (*In civics*) "*Find out as much as you can from your parents, or from any other source, about the Government of the City of New York.*" (*3*) (*In science or nature study*) "*Take for to-morrow the next . . . . pages.*" (*b*) *State with principles founded upon your reasons, three principles to guide in the assignment of lessons.*

(a) (1) Careless work on the part of the teacher. Enough work is suggested to the earnest student to discourage him. The average student needs a more direct assignment with reference to certain places for it.

Suggested assignment:

Why Columbus wished to find a route to India. His plan to reach the Indies. Reason for this plan. How viewed by the people. Efforts to secure aid. Result. First voyage. Equipment. Starting place. Incidents on voyage. Land! Character of natives.

I would not assign more than the topics preceding the "First Voyage" for one lesson.

(2) Wrong, for most people know very little of the way a city is governed. It is a general question not likely to interest pupils or engage the attention of the pupil's parent. Some parents would probably give undesirable information.

Suggested assignment: Ask pupils to find out at home, if no books are available, who arranges for the lighting of the city every night, and who pay for the care of the lights. Or, how are school buildings secured? How are the principals and teachers paid?

Either of these subjects would represent something touching the child's life; hence, better subjects.

(3) Very bad. To assign so much work from a book when so much material is at hand is inexcusable. Memory will be trained, but imagination, reasoning and judgment are higher powers and more delightful ones to engage. Suggestion: We are to talk about the dragon-fly to-morrow, and I wish you to be able to tell then where the dragon-fly is often seen and why he likes such places. Why is he one of our best insect friends?

(b) Following are the principles to guide in the assignment of lessons:

(1) The ability of the pupil.—It is useless to ask a child to do more than he is able.

(2) The time at his disposal.—A high school teacher made the remark that she expected the pupils to work at least one hour on her subject. When asked what the pupil would do if each teacher required the same amount of time, replied that she had not thought of it in that way.

(3) The ground to be covered.—In our school system a certain amount of work must be done each year. To accomplish this a teacher must assign enough work each day to cover the ground.

531. Drawing correlated.—*Mention three studies with which drawing may be correlated.*

Arithmetic, geography, language, history, and science. When done by the teacher, drawing appeals to the sense of sight, and thus becomes a valuable source of knowledge for the pupils. When the pupils make the drawings, the pupils are employing their motor activities, thereby exemplifying the educational principle of self-activity and also the psychological law that "every idea tends to realize itself in action."

The teacher should use drawing freely for the sake of illustration, and pupils should be encouraged to make it a means of expressing their thought.

532. Drawing a group.—*State, and illustrate by at least two sketches, the necessary steps in teaching children to make a drawing of a group of vegetables or fruits.*

(a) Get sufficient number of suitable specimens for the lesson.

(b) Place enough specimens for a group in different parts of the room. At least four groups on boards across the aisles at the front desks, and two or three further back, in a room of 42 pupils.

(c) Ask a pupil near each group to arrange it for a study.

(d) Get opinion of class in regard to placing.

(e) Rearrange where necessary.

(f) Choose best position on paper for group.

(g) Plan group with few light lines.

(h) Correct and finish with broad gray lines, slightly deeper on shadow side.

(i) Plan and draw, enclosing form for group. Place Monogram.

(j) Grade, name and date on back of paper.

(k) Class criticism. Time should be taken for this important part of the lesson.

(l) Monitors collect and replace all material.

533. Punishment: defined, approved, not approved.—*(a) What is punishment? (b) Describe and illustrate two modes of punishment proper for use in school; two that should not be used.*

(a) Punishment is the penalty paid for the violation of the rules of conduct. (b) Private talk in which the teacher aims to place the matter before the pupil as it really is, and the result if such a course is continued. A boy teases a smaller boy on the way to school or on the school grounds. He regards it as fun. His opinion should change after a short, sincere talk with his teacher.

(b) Detention followed by isolation for repeated tardiness, neglect of duty or other wrong-doing. A teacher in our school

carelessly left her purse containing a considerable amount in her desk while we were at chapel. She missed it on returning to her room, and it was found in the yard under some leaves, where a boy had placed it until he could safely take it away. It was found that he had been guilty of smaller thefts, and his well-arranged plans in this instance led to his dismissal.

NAGGING.—The unfortunate manner of continually finding fault and ignoring the effort, though feeble, that is made. I know a pupil who is happy this year in her school life because she has been told that she does certain work well—her efforts are appreciated and not overlooked because she is unable to excel in another line of work. She is not continually reminded of her defect.

SARCASM.—A teacher has no right to fling his bad temper at a defenceless pupil in words that ridicule and injure. A teacher of history class in a high school frequently humiliates members of his class by ridiculing their lack of knowledge or their weak expressions. He could use his time more profitably.

534. Emulation.—*The Jesuits are adversely critised for their use of emulation. Discuss its use and abuse.*

No teacher of ordinary experience can deny that emulation is a legitimate factor in the success of every school. Its use by the Jesuits is said to have urged one pupil to perform his task better than another could perform it, and thus a spirit of undesirable rivalry was aroused. Under the sociological view of education, it is held that every student should strive for the welfare of all other students as well as for his own good. In other words, the use of emulation, as applied by the Jesuits, does not harmonize with the modern view of education. Rousseau would not have Emile compare himself with any other children. Emile should compare himself with his own past self and thus have but one standard for progress. James speaks favorably of emulation with one's former self, but he puts a far higher value upon honest rivalry with another. See

Talks, pages 49 to 54. See also Dexter and Garlick's Psychology, pages 44, 228.

535. Analogy.—*Define, illustrate and criticise reasoning by analogy.*

Analogy is a kind of reasoning in which an inference is made on account of the resemblance of two things.

Illustration. Port Rico, a former Spanish possession, has inhabitants able to control themselves. Then the same is true of the Philippine Islands.

Criticism. Such reasoning is not conclusive. There may be many points of likeness, but one great difference can overthrow the similarities. Analogy can be used only when the points of likeness are overwhelming. For application in nature study, see Dexter and Garlick, 179.

536. Syllogism.—The syllogism is a form of deductive reasoning in which a conclusion is drawn from two known premises.

Major premise. Human beings are rational.

Minor premise. You are a human being.

Conclusion. Therefore you are rational.

537. Fatigue.—Fatigue is a physical condition in which the ability to do work falls below the normal average. Fatigue is caused by a waste product in the blood which is formed by the tearing down of cells in the performance of work. Nature is constantly trying to build up cell tissues as fast as they are destroyed. When the tearing down process exceeds the reconstruction process, fatigue follows and rest is needed for recuperation.

Some of the characteristics of fatigue are "restlessness, lack of power of co-ordination, showing itself in the dropping of pencils and the like, in slips of speech, and perhaps in uncertainty in the use of the limbs, twitching movements, decreased sensibility, especially of sight and hearing, flushing, unusual color of ears; and among the mental symptoms, irritability, loss of memory for common things, loss of curiosity and the

power of attention, disturbance of speech, etc."—Burnham in Article on Fatigue, New York Teachers' Monographs, October, 1901.

538. Note-books.—*What are the chief uses of note-books by the pupils?*

The chief uses of note-books are: (1) for reference work in class; (2) to record developments made in class and not found in the text; (3) to record the assignment.

When matters are being developed orally in the class the attention should not be distracted by taking notes; after the topic is somewhat formulated it may be briefly recorded as far as necessary to supplement the text. Unless fixed by notes the material is likely to be lost.—Young, the Teaching of Mathematics, p. 147.

539. Social stimulus.—*Explain meaning and application of social stimulus.*

Persons or ideas are called sociable if they are in harmony. Sociable means agreeable. Transfer the idea of a sociable company of workers to the school, and there apply the thought of (a) good will, (b) mutual agreement, (c) working. There is a stimulus under such conditions. It does not come wholly from the teacher, nor from any one pupil; each pupil is contributing something. The stimulus coming from the members of a society or group or society is social stimulus. The social stimulus is a good working spirit in a school; it is good public opinion among the pupils; it is community interest vs. selfish individual interest.

540. Circle of thought.—*What is meant by the circle of thought, as used by the Herbartians?*

The circle of thought for any pupil is the limit of personal interest of the pupil in the subject-matter of instruction, or in matters outside of the school. It is distinctly the work of education to extend the circle of thought so that the pupil may become interested in as many lines of investigation as he is

capable of carrying on without reaching the result known as smattering in education. The five-fold division of the course of study in our elementary schools illustrates a many-sided interest which should give every pupil the desired circle of thought to prepare him for future efficiency. An application of extending the circle of thought is found in Lang's Educational Creeds, page 150: "A boy spends his play hours in fishing, catching birds or butterflies; and he is in danger that his fine feeling, sympathetic heart will harden. Would punishment direct the content of his will to nobler pursuits? Would it thoroughly cure him? Certainly not. It would sooner increase the danger. The thoughtful educator pursues a different course. He seeks to build up a new interest in the thought-circle of the boy. He calls his attention to the beauty of the flowers, explains to him their nature and various kinds, shows him how to raise plants and how to take care of them, how to press and dry them. The probabilities are that he will spend his recreation hours in cultivating plants, in botanizing, and in making a herbarium."

541. Formal discipline.—*Explain formal discipline or formal culture.*

This doctrine is used as a standing argument for so-called disciplinary education, especially that in pure mathematics and classical languages. The assumption is that if the student masters these, he will thereby acquire a mental power that can be applied almost equally well to any kind of practical or professional life. This gymnastic theory of education involves the idea that it does not matter upon what the mind is exercised, provided only the exercise be vigorous and long-continued. The inadequacy of the theory lies in the fact that it ignores or underestimates the importance of the choice of subjects, both for their gymnastic efficiency, and their ultimate worth in developing the individual. A life of crime develops acuteness of intellect, but it does not develop good citizens. Again, mental alertness in philology, or grammar, or

higher algebra, does not insure corresponding alertness in those fields in which there is neither knowledge nor interest. The mind is never efficient in any department of endeavor in which either education or experience has not provided rich and abundant masses of apperceiving ideas.—DeGarmo in Dictionary of Philosophy.

The theory of formal discipline asserts that mental power developed in one subject is usable in any other.—Horne, Principles, p. 66.

The argument against the theory that there are distinct faculties in the human mind is contradicted by modern scientific research. Horne does not believe in rejecting the theory altogether, but he would modify it and express it in this way: "Mental power developed in one subject is applicable to any other in direct proportion to their similarity. This principle means the greater the similarity between two subjects the greater the applicability of mental power developed in one to the other ; the less similarity, the less applicability."—Principles, page 71.

542. Visualization.—*Explain and illustrate visualization.*

Visualization is fixing an idea in the mind by means of the sense of sight.

Aim. To teach list of spelling words.

Write words on board. Cover words with chart and ask class to spell as many as they can remember. At first they will not get all the words. The same process should be repeated until class can write all the words without aid of board. They learned those words by the process of visualization.

One practical illustration of training in visualization is the practice of teaching memory selections, declensions, classifications, or other matter, from written forms upon the blackboard. This plan invites comfortable posture of pupils and teacher; class attention, interest, and concentrated effort; social feeling and consequent social stimulus; the application of the law of

contiguity; and, as a result, commendable self-activity and desirable habits of study.

543. Inhibition.—*Show meaning and application of inhibition in teaching.*

Inhibition means withholding or stopping any form of psychical or physical activity. An extreme effect of fear may inhibit respiration and circulation for a moment. A child's attempt to speak on the stage may inhibit the action of the salivary glands so much that the mouth seems dry. Anger, happiness or fatigue may partially inhibit all mental activity for a short time. This application of inhibition shows the necessity of maintaining uniform working conditions in school.

Another use of inhibition comes under habituation. Suppose certain tendencies to evil are observed. Shall we try to inhibit the tendencies by breaking off abruptly or shall we try to work gradually toward disuse by substituting desirable habits? Thus we find the words *disuse*, *inhibition*, *substitution* and *direction* under methods of treating impulses, instincts and habits.

544. Suggestion.—*Define and illustrate suggestion as used in education.*

Suggestion is the tendency of consciousness to believe in and act on any given idea.—Horne, Principles of Ed., 284.

Suggestion is useful with pupils in all cases where the act does not demand the time and the power of personal reflection by the pupil. The pupil may be thinking well up to a certain point, but there he hesitates. A word, a sentence, a look or a gesture from the teacher may be enough to help him continue the train of thought. Thus in grammar, a pupil may have completed all the analysis and parsing excepting one word in a sentence. He has said that word is an attribute complement but he fails to decide the part of speech. The teacher asks what parts of speech may be used as an attribute complement; the pupil names the three and then selects the right one.

The teacher's glance at a boy's shoes may be suggestion enough for next morning; pointing to his own head may suggest the use of comb and brush; the teacher's appearance is a powerful suggestion; the teacher's penmanship, blackboard work, conversation, personality,—all work strongly by suggestion. This shows the relation between suggestion and imitation, law of association, etc.

545. Connotation of terms.—Connotation of terms is the meaning of terms as expressed in a good definition. A good definition involves genus, species and differentia, and it exemplifies these rules: (a) contains all the attributes of the term defined; (b) uses clear and definite language; (c) is affirmative rather than negative.

546. Extension and intention of terms.—*Explain and apply.*

Both intention and extension are words used in logic and philosophy. Webster says intention means "the collective attributes, qualities, or marks that make up a complex general notion; the comprehension, content, or connotation;—opposed to *extension*, *extent*, or *sphere*." Extension means "the capacity of a concept or general term to include a greater or smaller number of objects;—correlative of *intention*."

Illustration. Take the noun tree. Its intention includes the characteristics of vegetable kingdom; composed of roots, trunk, branches; requires light, heat and moisture; used for fuel, building, shade, ornament, etc. This intention or comprehension of the term tree is very broad. Now apply its extension and we find that it covers pine tree, maple tree, willow, etc., making a very wide use. Again, take apple tree for intention and extension. Its intention is not so broad as the term tree alone; nor is its extension so wide.

The use of intention and extension in educational work demands precision in thought in every process. Hence, the need of definite observation, clear percepts, vivid images, accurate memory, etc., in forming general notions.

547. Imitation.—*Discuss the imitativeness of children of four to six years of age, in its relation to their development.*

Of all animals, the man animal is the most imitative. The first acts which the child of the kindergarten age does are those due to instinct. These are imitations of the acts of his ancestors. Among them are the desire for play, for freedom, for examining strange things, etc. Through the gratification of these desires he develops physically and gains knowledge of his environment. He imitates those with whom he is thrown in contact consciously and unconsciously. The language he hears becomes his language, the countenance he sees modifies his countenance. Manner of walking, sitting, standing, etc., all become a part of his acquired experience. All of these acts are steps in the gradual adjustment to environment. The models he imitates serve either as a check to his development or as an aid to it. Instructive imitations, imitations of the simple and the complex acts of others, help to give physical and mental determination to the child's development. A further recognition of this fact implies that the power of imitation is continuously operative until the individual has reached his complete development. Not only this, but one generation advances beyond that of its predecessor by imitating its successes and shunning its failures.—See Horne's Philosophy of Education, 175–187.

548. Abstraction.—*What is abstraction? Illustrate.*

Abstraction is the mental process involved in retaining the common qualities which belong to all the individuals of a certain class and rejecting the uncommon qualities. A complete process of abstraction results in the concept or general notion. It is synonymous with conception.

549. Action: reflex, impulsive, automatic, deliberative.—*Define and illustrate each.*

Reflex action is the process of changing an afferent nerve current into an efferent nerve current without the aid of the brain. Illustration:—I put my finger on a warm object; the

afferent nerve carries the message to the nerve center, where the efferent nerve receives the return message to remove the finger. This action takes place without the aid of the brain and is thus called reflex action.

Impulsive action is that in which the entrance of an idea into consciousness is immediately followed by the appropriate action. As an illustration, suppose I am hurrying to the post office to mail a letter. While on the car I see a friend from a distant city. I run at once to greet him. This is impulsive action.

Automatic action is habitual action. Any action becomes automatic as soon as it is carried on without any intervention of the will. An illustration of this is the finger action in playing a piano after a person has become accustomed to that kind of action.

Deliberate action is that in which (1) action is suggested to the mind (2) the mind considers whether it will act or not, and (3) the will makes the decision. This is illustrated in the decision of many teachers who begin to consider the advisability of teaching in New York City, think of the matter a year or two, and then decide for or against the action.

550. Nature study: aims, defects, suitable lessons.—*1. State what you conceive to be three important aims of nature-study in the elementary school. (3). 2. Mention three mistakes in method commonly made by teachers in lessons on plants, and in the case of each state briefly the proper procedure in the same premises. (6).*

1. (a) To create and strengthen a permanent love for, and interest in, nature. (b) To develop the powers of observation. (c) To impart useful knowledge.

2. (a) They choose unfamiliar and uncommon plants with the idea that there is more in them to interest the child and more to be learned from them, forgetting that the knowledge that the child already has is to be of great assistance in arousing his interest and causing him to acquire new facts. (b)

They tell the pupils too much about the plants. (c) They make the lesson or series of lessons extend over too short a period of time, giving the child too little opportunity for observation and reflection.

PROPER PROCEDURE.

(a) Produce several cotton seeds. Tell pupils what they are, if no pupil is able to tell. Talk with them about the way to plant them and to care for them. Let them plant and care for them in the school room.

(b) The pupils watch over the little plants from the time they appear above the ground till they have grown to some size (perhaps, a foot high). During this time pupils ask a great many questions, some of which should be answered, others referred to the study of the plant itself. Later, if time is lacking for the full development of the plant, the cotton boll is brought out, examined, discussed, the seeds are found, etc. Then the complete life history of the plant is gone over and the various uses of the plant.

(c) Is answered by the fact that this work has occupied a period of several months.

551. Too much written work.—*There is a feeling that too much written work is called for in our schools. Give three valid objections that are made.*

1. It is a device for occupying the time of pupils for the sake of giving release to the teacher.

2. The papers are not criticised and returned to pupils and so it is a waste of energy.

3. The habits of carelessness and inaccuracy are a result of number 1. Pupils know that their work is not examined and they are satisfied to submit written productions that are far below the standard of oral exercises in that same class. Much of the experience in later life depends upon the power of oral communication of thought. So much written work is not a guarantee that the pupil will be able to do what is required from him in the line of oral communication.

552. **Dr. Maxwell's suggestions in arithmetic.**—"Great improvement has been made in teaching mathematics since the issue of the circular of the Board of Superintendents on that subject last fall. More attention yet, however, must be given. The following suggestions are not yet fully carried out in all schools:

(a) The pupils should be allowed to spend some portion of the mathematics period each day in working as rapidly as each pupil can out of the textbook.

(b) That there should be rapid drill each day in the fundamental rules; in addition, making sure of the sum of each line before proceeding to the next.

(c) That oral arithmetic should be given each day and should precede the written work.

Teachers should be asked to begin this work with the first day of the term. It is no uncommon thing to find teachers, a month after the opening of the term, who have not commenced this work, though their intentions are admirable.

Many teachers spend a month or more reviewing the work of the grade below. This is a waste of time. It is not surprising that children seem to have forgotten what they have learned. Let the teacher take up some new work and if she finds that the children need some review in connection with the new thing let the review be given incidentally. Many teachers spend time complaining of what the teacher below her left undone which could be more profitably employed in doing the advanced work of her own grade. This is particularly true with regard to arithmetic. In arithmetic, especially, the class should be taught in at least two sections." (September, 1907).

553. **Drill in observation.**—*Suggest a simple plan of drill in observation for elementary pupils.*

Take the reading lesson, select some familiar and interesting portion of the work already covered, and then follow this plan:

1. Have pupils read the sentences, close books, and then reproduce orally or on paper. Test by opening book and comparing with the original.

2. Copy selections accurately and neatly from the board or from books. Insist upon absolute accuracy.

3. Learn quotations and several memory exercises and then reproduce them in writing again insisting upon absolute accuracy. In all three of these exercises the insistence upon accuracy will tend to habituate the children to that mode of thinking and acting.

554. Writing as a penalty.—*Name objections to requiring pupils to write words or sentences many times as a penalty of violating some rule of conduct.*

It is a waste of time; it gives bad habits of penmanship; pupils become nervous and angry; the penalty becomes associated with the task instead of with the violation and thus the pupil is likely to increase his feeling of dislike for this study. See 526.

555. Value of phonics.—*State two objects of teaching phonics.*

To train the organs of hearing to distinguish sounds and to train the organs of speech in making those sounds.

556. Two trials in spelling.—*Why should not a pupil be allowed a second trial in oral spelling?*

It may cause inattention and encourage guessing.

557. Syllabication.—*What is the advantage of teaching syllabication?*

It aids in pronunciation and also shows how to divide the word at the end of a line.

558. What to observe in studying spelling.—*In studying a spelling lesson to what three important things should the pupil give attention?*

To the pronunciation of the word, to memorizing the form of the word, and to the correct use of the word.

559. Relation of climate to animal life.—*Show the relation of climate to animal life by distribution and characteristics of animals in North America.*

Arctic coasts, polar bear, musk-ox, the extreme of cold.

Farther south, moose, elk, caribou, reindeer and small fur-bearing animals. Intensely cold and forests.

Western highlands, grizzly bear, bighorn sheep, Rocky Mountains goat, American panther. Cold and rough country.

Eastern part south of Great Lakes, domestic animals have taken place of native animals, horses, cattle, sheep, hogs, chickens. Temperate zone.

Southwest. Mixed animals of South and North America, as well as scorpions, lizards, and other reptiles. Dry, arid.

Southern lowlands. Alligators, crocodiles, paroquets, humming birds, etc. Hot and moist.

560. Lessons on latitude, Arctic life.—*Describe a good method of teaching the following geographical ideas to children: Latitude, Arctic life?* (6)

(a) *Aim.* To teach idea of latitude.

Preparation. We are to learn today what is meant in geography by latitude. You may all point to the north. (Children point toward front of room). Correct. Point toward the south. (Children point toward back of room). Correct.

Presentation. Count the seats in a row in this room from front to back. How many? Seven. Which is the middle seat in each row? The fourth from each end. The pupil in fourth seat of first row may stand in the aisle. Move forward toward the north one seat, pupil in next row do the same. Next, etc. How far north from the middle seat is each pupil? One seat. How is this distance shown? By the line of seats. Return to seats. Go south of the middle, two seats. How far south is each pupil? Two seats. How shown? By the line of seats. Third pupil move south one more seat. How far south is he? Three seats south. How shown? By the line of seats. What is the relation of each line of seats to the

middle line? They are parallel to it. Now, suppose we call the middle line of seats the equator and the distance of the first line of seats north one degree north, that of the first line south one degree south. The second will then be how many degrees south? It will be two degrees south. What name shall we apply to these distances north and south, supposing the middle line of seats to be the equator? We will call it latitude.

Now, let us go to the globe. The globe represents what? It represents the earth. Find the equator. What do you find running around the globe parallel to the equator? There are lines parallel to the equator. What did each line of seats indicate? Distance north or south of the middle line. What do these lines indicate, then? Distance north or south of the equator. What do we call that distance? We call it latitude. These lines then must be parallels of what? They must be parallels of latitude.

Now, let us try hard to say to ourselves just what latitude is. Latitude is defined. Next, let us say to ourselves just what parallels of latitude are. Parallels defined.

Application. Find on globe how many degrees north or south of the equator certain places located on the given parallells are. Find three places in 10° south latitude, three places in 20° north latitude.

Aim to teach idea of Arctic life.

Preparation. Today we are to learn something about the living things in the Arctic regions. What is the climate in those regions? It is cold. Is there any summer there? Yes. What of its length? It is very short.

Presentation. At what season of the year do plants make the most of their growth in our climate? In summer. Would they grow as much as they do if the summer were very short? They would not. Would we probably have as many kinds of plants as we now have? No. From this what shall we conclude in regard to the plants of the Arctic regions? They must be few in number and small.

Teacher here gives detailed description of plants, shows pictures, etc. (Then follows division on animal life.)

What wild animals remain active in winter here? Only those having warm coats of fur. Since it is very cold the greater part of the year in Arctic lands, what kind of animals will be found there? Only those having the thickest coats of fur.

Teacher tells of animals and shows pictures.

How do we dress in winter? In furs and woolens. How must people dress then in these Arctic lands? They must dress in warm furs. What kind of food do we relish most in winter? Animal foods that contain plenty of fat. What then is probably the food of the inhabitants of Arctic lands? That containing large quantities of fat. Can you think of two reasons why this must be so? For warmth and because of the scarcity of plants.

Teacher tells of Eskimo life showing pictures of homes, occupations, etc.

Application. Pupils reproduce orally and in writing what they have been taught, copy simple sketches of Arctic scenes to accompany and illustrate their written work on the subject.

The above subject-matter ought to be divided into at least two lessons.

Chapter XVII. Answers in Methods for Assistant to Principal.

561. **Exercises in reading before textbook.**—(*a*) *Describe three exercises which should be given primary children before presenting the reading book. Give psychological reasons.* (*b*) *Give with reasons specific cautions to be observed in teaching phonics to primary children.* (*4*)

The method of reading employed in our school is that known as the McCloskey Method. It is founded upon strong psychological principles.

I. Since attendance is necessary as a first requisite in the education which the school extends to the child the school is presented as a form of community life in which the child shares the inheritance of his race, and is taught to use his own powers for social ends. Through conversations, nature lessons, games and songs he is made to feel happy and at home. He soon learns to give of his store of wisdom (small though it may be) to others. He learns to talk not timidly, but freely, joyfully. He has learned from the beginning that school is a process of living, not some dreaded unknown process for future living.

II. Recognition of principle "From whole to part."

1. Story told of "The Kid", a story taken from the Talmud.
   (a) As a whole to give idea and spirit.
   (b) In parts, showing logical order of incidents.
   (c) As a whole to retain unity.
2. One paragraph told by children and written upon board. Then read from blackboard.

3. One sentence attended to, then single words (sight cards) presented.

Note. The reading of the poem by the teacher has created in the children a desire for the ability to read for themselves.

4. After the entire lesson is known in script the printed pamphlet is presented.

Note. No written language, spelling, penmanship, or phonics are done until the printed matter has been introduced after at least forty words are known as wholes.

III. "In bringing a child into harmony with his environment", says Mr. Maxwell, "it is necessary to give him the use of his hands." Many of our children have not attended the kindergarten and have no idea of manual work. Seat work must be taught before the introduction of reading, as classes are taught in groups and one group must be taught to do independent manual work while the other group is reading.

Summary. I. Free, happy attendance. II. Use of his hands for independent work. III. Much preliminary blackboard conversation and sight card work before presenting the primer to a child.

(b) Cautions on phonics.

I. After forty or fifty words are thoroughly known at sight, it is safe to begin phonics. To guard against halting in reading, words are first established as wholes in the child's mind.

II. A strong motive is created by directing attention of pupils to the fact that they must not depend on others to tell them all new words; they must learn to make them out for themselves. Caution, State the aim to your pupils; avoid an un-

known road toward an unknown goal in creating the interest necessary to call forth effort.

III. Recalling is easier when several avenues of association have been appealed to. Therefore children learn to write as they sound.

IV. Remember that imitation is strongest in the tiny child. (a) Teach the child to "listen sharply". (b) Take one child at a time. (c) Let teacher be certain in making her own sounds correctly, allowing child to touch organs of speech when necessary.

V. Observe principle that the mind naturally proceeds from whole to part. (written phonics.)

VI. Remember that the work of the 1A is the foundation for all later life. Therefore one cannot be too careful in training for

1. Distinctions (depending on neatness and accuracy of contact of vocal organs. Use models, teacher and pictures.)
2. Firmness (depending on many drills.) King's rhythmic gymnastics are recommended.
3. Fluency (easy transition from one sound to another; practice recommended.)

562. Ways of teaching the meaning of words.—*Give several ways of teaching the meaning of new words to pupils in the 6A grade. Illustrate.*

The meaning of new words may be taught to 6A pupils as follows:

1. From the context, when this meaning is clearly suggested by the thought of the selection.
2. By using the dictionary when the definition there given is clearer than the context would be. Illustration:

Up from the south at break of day
Bringing to Winchester fresh dismay
The affrighted air with a shudder bore
Like a herald in haste to the chieftain's door
A terrible grumble and rumble and roar.

In this stanza a "break of day" and "affrighted" might be understood from the context, while "dismay" and "herald" would be referred to the dictionary.

3. By word analysis; i. e., etymology, or stem, prefix, suffix. Illustration:

Trans port = to carry + across
Pro cession = the act of + proceeding
Pres ence = state of + being present

4. Many words are understood by children when the teacher has previously used them. A blackboard list accompanying such use is excellent. Illustrations:

Radiator; reduction; signature; parallel; financial crisis, rate, percentage, meridian.

5. Historical talks about words are interesting. Many words in our language easily lend themselves to this method: Columbia's grand oriflamme.

The forum	Bolivia
Montreal	civics
Venezuela	cavalier

6. Objective teaching most clearly recalls others:

Use object	cacao	Use picture	The Incas
	mahogany		cypress tree
	bamboo		plaza
	borax		landscape
	nitrate of soda		mantilla
	pampas grass		Vesuvius

563. Difficulties in teaching English to foreigners.—*State four characteristic difficulties met in teaching English to foreigners. Describe a method that will meet these difficulties. (4)*

The Italian, the Assyrian, the Russian meet together in our "foreign classes." Our course of study states as one of its educational aims, "to give a body of ideas and a trend of action that will assist the child to become an intelligent and patriotic citizen." This aim must be accomplished through a common medium,—that of the English language.

The Russian, through years of repression, has become depressed, and his spirit must be elevated; the Italian and Assyrian, both passionate, sometimes over-energetic, must be curbed; the emotions of all must be trained. Hence arises our first difficulty.

I. Lack of esprit-de-corps.

I recommend group work and participation in patriotic exercises, calling for the exercise of the spirit of "each for all, and all for each."

II. Reticence on part of timid foreigner is another difficulty. He is afraid of being "laughed at." Do not say "Don't be afraid." This only makes him more self-conscious. Rather make "interest in work at hand" so strongly felt that he will forget himself.

In group work, where a number of children are working in the making of one object, talking being permitted, the reticent child quickly sees the need for language and avails himself of his opportunity.

III. Difficulties in speaking our language.

1. Misunderstood words, as, "In making a dress we cut the talks (tucks) out around the neck.
2. Literal translations; as, in describing a sore throat a child exclaims "I got it in the neck." German "Ich habe es im hals."

3. Peculiarities of foreign language introduced into our own. Italian in trying to say "Give me a drink of water," says "Giva mea drink watr."

For all of these difficulties I recommend much exercise in careful ear and voice training through music and phonics, much individual help, and perfect models. In speaking of models one cannot be too careful. A foreign child was heard to say, "Leave me alone." When corrected replied, "You taught me the verse :

Leave them alone and they'll come home
Bringing their tails behind them."

Another foreigner, "I am thinking on the answer," when corrected replied that the teacher had taught :

"Whatsoever things are pure, whatsoever things are true, think on these things."

Other literal translations make havoc of our rules of syntax. "I'll go get my eat," "It fails me six cents," etc.

Correct patiently the wrong, present the perfect, work and wait, keeping in mind that the general aim is to make the wanderer proud of the land of his adoption, eager and anxious to speak its language carefully and correctly. Create in him a spirit of love for its history and literature. Allow him the use of every possible avenue of expression,—eyes, face, lips, hands, feet. Dramatic work is excellent. As the expression has been, so will the expression be and when we know truly what is within, soul touches soul, no matter what language is spoken, and we are prepared to educate, to lead him forth, the dreaded school boy foreigner.

Consult Straubenmuller's article on Teaching English to Foreigners, p. 43 of number III of volume I of School Work.

564. Unitary analysis.— *What is meant by unitary analysis in arithmetic? Illustrate by a problem. Solve this or some other problem by some other method and show where each would be applicable.* (*8*)

Unitary analysis is reasoning to and from the unit.

Problem: 6 horses cost $420. What will 12 horses cost? The unit considered in this problem is the cost of 1 horse.

$420=cost of 6 horses (6 units).

$70=cost of 1 horse (1 unit).

6

$70 x 12=cost of 12 horses.

The place for this method according to course of study is 4th year where two step analysis is introduced.

Another method:

12=6×2

12 horses cost 2 times cost of 6 horses.

$420

×2

$840

The ratio of this problem would be clear even in the third year when the multiplication of three orders has been taught.

565. Multiplication of decimals.—*Show how the progress of multiplying numbers, involving decimals, may be explained through the fundamental principles of the decimal notation without referring to common fractions. (4)*

.1×.1=.01

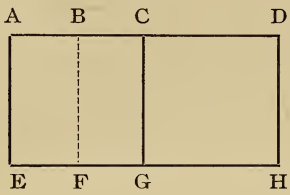
Cut a sheet of paper into 10 strips. Cut each strip into 10 pieces. Count pieces into which whole paper is cut. What part of whole is one piece? Ans. .01.

It has previously been taught that the system of notation applicable to the left of the point (for whole numbers) applies on the right side of the point as well. Since the place for one tenth is immediately to the right of the point (.1) the place for one one-hundredth is the second place to the right .01. There being no tenths, a cipher fills the vacancy.

566. What part one fraction is of another.—*Invent an example finding what part one number is of another each of the num-*

bers being fractional; solve the problem; use a diagram and letter and explain the diagram. (4)

Problem. A bought $\frac{1}{2}$ an acre of land and gave away $\frac{1}{4}$ of an acre. What part of A's portion was given away?

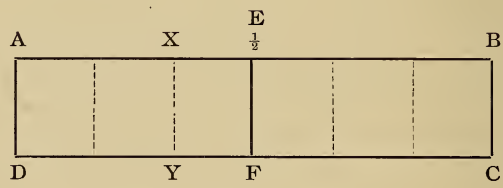


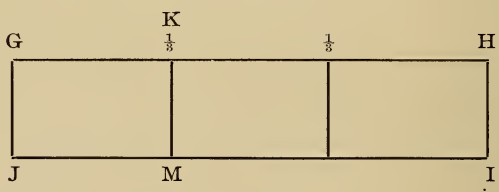
A E D H=whole field
A E G C=$\frac{1}{2}$ (A bought)
A E F B=$\frac{1}{4}$ (given away)
A E F B=$\frac{1}{2}$ of A E G C (by observation.)

Hence, $\frac{1}{4}=\frac{1}{2}$ of $\frac{1}{2}$.

Another answer for 566.

What part of $\frac{1}{2}$ is $\frac{1}{3}$?





Let A C represent any number.
A F represent one-half of the number.
Let G I represent the same number.
Let G M represent one-third the same number.
To find what part of A F, G M is.
Divide A C into six equal parts.

The line X Y falls on K M, the division line for one-third.

But X Y is two-sixths of the whole number.

Dividing the number into six equal parts divides A F or one-half into three parts, and A Y represents two-thirds of A F. A Y also equals G M or one-third. G M equals two-thirds of A F, or one-third is two-thirds of one-half.

567. Ideas and thoughts in history. Outline on Growth of the Union.—*Quotation which stated that the important feature of teaching history is to have children get the idea and thought and not mere words. Illustrate from lesson-whole an effective method of accomplishing this end.* (*8*).

"Ideas and thoughts" are the content of history. They are the will of man "Writ large." To discover them is to discover the spirit that actuated the people of any given period, and to note how this spirit expressed itself in the conduct of the individual or the nation. Such discovery develops the judgment—a training most necessary to the citizen who must be able to feel the spirit of the age in which he lives, in order to act with any degree of stability amidst the confusion arising in any popular government. It is not knowledge of a series of facts, but the power to find the cause and judge of the probable outcome, and a conception of ideals, that make history worth while; that we may know enough "to love mercy, to deal justly and to walk humbly with our God."

Such, however, must be the work of the recitation; the child, being immature and without the wide experience and broader knowledge of the adult, could hardly make a just interpretation, not, at least, until he has been helped to relate and interrelate the facts he learned by private study.

The Revolutionary period 1760-1789 will be found to have for its content not so much rebellion as a desire for union; union against England to be sure, but still union, and that on the basis of the rights of Englishmen. Later this becomes union on the basis of the rights of man, resulting in the Declaration of Independence and actuating the entire Revolution-

ary war; though their ideal—Union—was still far from being attained even when the war was brought to its successful close.

One of the best means for developing the historic sense is to ask children to make an orderly arrangement of facts. Each of the facts will have an idea which differentiates it, or one which gives it fellowship with the rest. Cardinal facts should be noted; irrelevant matter eliminated. Every event should be shown to be an outcome of the past, an effect as well as a cause, changing the future by its results upon public sentiment. Phases of leading ideas should be discovered and events arranged according to the principles of co-ordination and subordination, thus developing not memory alone, but reason and judgment as well.

Such interrelated knowledge concerning the Revolutionary period would stand somewhat as follows:

THE GROWTH OF UNION. (1760-1789).

A. Union against England.
   1. Union for Rights of Englishmen.
      (a) Committee of Correspondence.
      (b) Stamp Act Congress and Declaration of Rights.
      (c) Boston Tea Party.
      (d) Lexington, Concord, Bunker Hill.
   2. Union for the Rights of Man.
      (a) Declaration of Independence.
      (b) Revolutionary War.

B. Union on domestic questions.
   1. Union on the basis of state sovereignty.
      (a) Articles of Confederation.
      (b) Internal disputes.
      (c) Financial depression.
      (d) Insolence of foreign nations.
      (e) Sharp Rebellion.
   2. Union on the basis of nation sovereignty.

(a) Adoption and ratification of the Constitution.
(b) Election of Washington.

568. Chicago as a type in geography.—*Make an outline for the study of the city of Chicago, or some other city in the United States for a 5 B class. (8)*

Outline for New York City. (An industrial and commercial center).

I. Physical conditions affecting its growth and importance.
   a. Location.
   b. Surface.
   c. Climate.
   d. Harbor
      Rivers.
II. Great steamship and railroad lines terminating in and about New York City.
III. Study of streets and avenues and means of communication.
IV. Chief business localities.
V. Chief manufactures.
VI. Points of interest.
   Parks, museums, bridges, tunnels and water supply.
   Schools and other public and historical buildings.

Chapter XVIII. Answers in School Management for Assistant to Principal.

569. Promotions: Principles.—*(a) State the principles underlying a good system of promotion in elementary schools. (b) Describe a system you have observed for promoting bright children as rapidly as their ability will permit. (c) Defend this system.*

(a) It is desirable to accomplish two things by promotion; "First, to advance children as rapidly as is consistent with the healthy operation of their intellectual powers; and second, to secure as nearly as may be uniformity of attainments among the pupils of a class." This shows that physiological, social and economic principles are basis for any system of promotion. It is quoted from Dr. Maxwell's article on "The Examination and Promotion of Pupils" in Teacher's Monograph, December, 1900.

(b) and (c) The system of promotion in which I have been most deeply interested is that in force in one of the schools of this city. It follows the modern tendency in combining and adapting many well known systems. Its basis is the regular semi-annual promotion, though teachers are kept with their classes one year at least (whenever possible), thus saving the valuable time usually spent by both teacher and pupils in becoming adjusted to their new environment.

Individual promotions at any time during the year are a feature of the system. Two considerations govern these: First, the removal of any obstruction to the school system—foreigners, over-aged children, defectives (mental, moral or physical); and, second, the grouping of children according to ability. For children likely to clog the system "Special Classes" are formed. They are taught somewhat after the Batavia

plan—two teachers for a group of forty or fifty, one for class instruction, one to give individual help. The bright pupil is promoted in accordance with the Pueblo idea : he enters as an individual, is promoted and graduated as an individual. With due regard to his age and health he is allowed to pass from grade to grade regular or special at any time during the term ; sometimes working alone, sometimes with a group, and omitting many drills and some connecting links.

The rank and file of the school are graded in accordance with the requirements of the New York system, but especially bright groups of somewhat uniform attainments work in accordance with the Cambridge idea—one teacher for a class, but doing the work of one and a half or two terms in six months.

This seems to me the best, because it is the simplest, most elastic system I have ever observed. It cares for the slow child, yet pushes the bright who must soon be a wage earner. It is well adapted to our great shifting foreign population yet in perfect harmony with the requirements of the New York Course of Study.

570. Games for first year.—*Mention four games suitable to be played by first year children and describe the method of playing two of these. Indicate the part taken by the teacher.*

I have written many of the games played by our first year. Such changes from course of study, as have been made by me, have been approved by the Director of physical culture. In writing my games, I have adapted Froebel's Kindergarten games and Miss Hofer's Singing Games.

1. The Snail.
2. The Stream.
3. The Ladder.
4. Bean Bag.
5. Round and Round the Village.
6. Squirrels in Hollow Tree.
7. Wall Tag, Relay Race.

The Snail:

Children form in line (holding hands) then march to form spiral, the leader turns about and unwinds the spiral; marching on the same spiral is repeated, but upon reaching the center the leader passes under raised arms of the other children, coming out at one side of the spiral. Caution to children: "Keep hold of hands."

Upon entering spiral, class sings:

Hand in hand you see us well,
Creep like a snail into its shell
Ever nearer, ever nearer, ever closer, ever closer
Who would have thought this tiny shell
Could have held us all so well?

Upon unwinding spiral, class sings:—

Hand in hand you see us well
Creep like a snail out of its shell
Ever farther, ever farther, ever wider, ever wider
Who would have thought this tiny shell
Could have held us all so well?

The Stream:—

Class form a ring, holding hands. Two children stand in center of ring, hands clasped. Other children are placed in ring to represent trees and flowers. At the first words of song, "Give, said the little stream", the leader in outside ring marches forward under bridge around trees and flowers.

"Give," said the little stream, "Give away, give away."
"Give," said the little stream, as it hurried down the hill,
"I'm small, I know, but wherever I go,
The grass grows greener still."

Cho.—Singing, singing, all the day,
Give away, oh! give away
Singing, singing all the day
Give, oh! give away.

During second verse children in circle raise arms, fingers moving represent rain drops. As they fall upon heads of flowers, these raise heads and uplift arms, open mouth (slightly) to drink in falling drops and are refreshed.

"Give," said the gentle rain, "Give away, give away."
"Give," said the gentle rain as it fell upon the flower
"I'll raise their drooping heads again as I fall upon the flowers."

CHO.—Singing, etc.

.....

.....

As I fall upon the flowers.

I have selected the above games because there are no "lookers on." All children are active at all times.

The part to be taken by the teacher was cited so aptly and beautifully by Frederich Froebel, a "hundred years ago," I cannot answer you better than to quote his words: "Come, let us live with our children." Play with them? "Never," says Froebel, "ask a child to do what you would feel ashamed to do yourself." Be, at all times, their leader, again let a child lead. In the playground, in the background, be the umpire, the inspiratory sympathetic head. With all there need be no loss of that dignity which the little child loves. I mention this because teachers are very often timid and shy about playing themselves. Remember Froebel's guide: "The child is the test of the dignity and fitness of the game." Eliminate all that you do not think proper for yourself to participate in.

571. Dishonesty; cheating and stealing.—*If the spirit and practice of dishonesty (cheating and stealing) had become rife in your school, describe how the principal or assistant to the principal might deal effectively with it.*

Dr. Maxwell in rating a teacher marks a teacher C or D when such a condition exists in her classroom, considering it lack of control. He further states that the aim in marking

teachers is to raise the "teaching force to a higher plane." It, therefore, becomes the duty of a supervisor to assist the teacher in controlling her class ; i. e., to find the cause for the lack of control and to help to remove it.

Dr. Hervey says "Personality" is at the root of this control, that the teacher's ideals and attitude toward life will surely be reflected in a class. Accuracy on the part of teachers is a primary requisite. Such statements, as "I am the sister of a policeman ; if you don't mind me, I'll have you all arrested ;" or "A five dollar gold piece to the first boy who works this problem !" (not given, of course) should not be tolerated. Were they rife in a school, they might well become the theme of a general conference. It would be necessary to raise the moral tone of the teachers and their ideals. Conferences, general and private, helping the weaker teachers to associate with the stronger in social ways ; having teachers visit ; reading, both general and professional literature ; suggesting travel ; if the time permits making somewhat of a companion of those teachers needing it most ; all these might be helpful in raising the ideals of teachers. But as with a class, so with a school, the thing of utmost importance, seems to me, is the ideals of the supervisor herself. They permeate a school and almost unconsciously make or mar it with silent resistless force.

As far as the children are concerned, it has been said, "Trust a boy and he will come up to your expectations every time." Moreover, children are not developed morally, any more than physically, or mentally. This should be clearly shown to teachers. Hence the removal of temptation becomes absolutely necessary. "Yielding to it is sin." Hence children should never be tempted. Valuables should be carefully locked up. In marking papers no child should be tempted. Accuracy should be insisted upon, but throughout to be positive is better than to be negative, and wrong impulses are best controlled through the great principle of inhibition. The

teacher should feel no contempt for young souls, much less show it. If she give them plenty of healthy, happy work, hard work very often, she will lead them back to self respect, the foundation upon which may be securely laid the "corner stone" of character,—principle, the will to do the right whatever the consequences. After which it becomes an easy matter to show that lying, cheating and stealing are mere forms of selfishness. It can best be done by cultivating a proper class spirit which makes the child say proudly "our class," "our school" and makes him feel the deep responsibility of the words uttered two thousand years ago, "Man liveth not unto himself" and "Bear ye one another's burdens." When this condition has been reached the spirit of altruism will have successfully eradicated that of intrinsic selfishness evidenced by the fact that lying, cheating and stealing were rife in the school.

572. Control of feelings and desires.—*That phase of education which has for its aim the teaching how to control the feelings and desires is most important. Explain the meaning of "control" in this sense. How may this be accomplished in an elementary school?*

Training in this sense refers to moral training. It is the training of the will to act habitually in free obedience to the sense of duty. (Choosing always to respond to the highest motive, controlling baser.) Every act of the soul leaves a tendency to act again in like manner and increased power to act. Power and tendency are the abiding results of all activity and this is the fundamental fact in all training for control. Character is the result of moral activity and the source of conduct; hence, it is trained by appropriate activity of the moral powers.

If we believe that all education is habit-forming let us help to form the habit of "right doing" in the little child so that when he is older he will love the right and hate evil, inhibit the desire for vice (carelessness, lying, stealing, laziness, tardiness,

truancy, impudence and rebellion) by supplanting in the tiny child the virtues (accuracy, justice, punctuality, co-operation and obedience.)

In habit-forming we must remember that for every act of the mind there is a corresponding nervous readjustment; hence, make our nervous system the ally and not the enemy.

The words uttered two thousand years ago, "The spirit indeed is willing, but the flesh is weak," and "Who can deliver me from the body of this Death ?" show us that the power of habit to control our spirit (will) was felt as keenly then as it is to-day.

Moral freedom (free obedience) is the supreme aim; it is freedom! It is intellectually and morally independent! Hence, the aim of the teacher must be "emancipation of pupil from supervision." Give him independent tasks to perform. Moral freedom is attained through self-control. So far as is advisable leave the pupil to his honor and sense of right. Eliminate repressive measures appealing to the better instincts and the awakenings of his conscience. Dr. Hervey says, "No person has a fully developed moral character until there has been a transfer of the seat of authority from without to within himself; a moral man obeys himself." To trust a pupil tends to make him worthy of that trust. Therefore a wisely applied system of self-government may be found effective. The essential point is that the teacher should make pupils sharers in problems arising out of their community life; and that each should be trusted to perform a certain function. Then self-control will mean not so much self-repression as healthy and effective co-operation. Self-assertion will end in self-renunciation.

573. Point of fatigue, plenum vacuum, moral imbecile, artificial incentives.—*Explain each.*

(a) The plenum vacuum is the system of ventilating and heating used in our public schools. Air is taken in at the level of the first or second story. It is carried through ducts to the cellar. It first strikes a system of pipes (tempering

coils) used only when the outside temperature is below forty degrees. These coils bring all air to a temperature of 40 degrees. Then all the air is forced through two coils which raise it to 68 or 70 degrees. Thermostats automatically force the air to this temperature. It goes through a blower to the classrooms. Then it enters near the ceiling. Deflectors force it down into all parts of the room. Impure air is thereby forced out near the floor. (Each pupil is allowed 30 cu. ft. of pure air per minute.) The impure air finds its way out through ducts leading to the roof.

(b) Point of fatigue is that period at which nature warns us that we have passed beyond the point of normal weariness to abnormal exhaustion.

Restlessness, lack of co-ordination, omissions in speech, uncertainty of movements, decreased sensibility (sight and hearing) flushed face—loss of memory and finally insomnia are signs of abnormal fatigue.

We, as teachers, should remember that the amount of study or exercise which produces normal fatigue in a strong child of ten produces abnormal in a weak child. The point of fatigue is especially low in children whose parents are alcoholic or neurotic in their habits; anaemic children, children defective in sight and hearing; rapidly growing children, and those entering the period of adolescence, mouth breathers, and those who have adenoid growths. Cautions.

1. Avoid cverpressure and too long recitations.
2. Have suitable periods of work and rest under the psychological law of change.
3. Shorten number of hours of work in primary grades, especially for children who are easily fatigued.
4. Grant recess period for open air exercise.
5. Alternate difficult and easy studies—placing difficult studies in morning when wave of vitality is highest.

6. Study rationally the psychology of the child, so that management of school may satisfy the needs of individual pupils.

(c) Moral Imbecile. A moral act is a feeling of obligation to some higher power, carried out by the will. It is the innate impulse of the soul of all rational beings. A moral imbecile is one in whom this moral sense (of duty) is so low as to be scarcely if at all perceptible.

In treating a moral imbecile, look to the cause. If it is physical remove the cause as far as possible. If it is due to some defect of intellect, hereditary or otherwise, the only course to pursue is to place him in the hands of some competent person whose love for human life is so great that she will neither show nor even feel contempt, but be patient, loving, trusting, cheerful, hopeful for the best; show no intolerance nor impatience, but "be tender with the sanctities of youthful feelings."

In dealing with such defectives, be careful of the diet, the hours of sleep and recreations, observe the rules of cleanliness for this is next to Godliness, is even a part of Godliness.

Manual training and physical culture are of great benefit in training for control.

(d) Artificial Incentive. Desires that incite or impel a man to effort are called motives or incentives. A natural incentive is one in which the desired object is the immediate result of the effort as, knowledge is the immediate result of study. But, when the desired object has no such consequential relation to the effort put forth, it is said to be artificial; as, "stars" a reward of study.

574. Adjustment of seats and desks.—*Describe the proper adjustment of seats and desks.*

Pupils are of necessity a great sedentary class; hence arises the question of proper adjustment of seats and desks.

I. Adjustment as to pupil's physical comfort.

a. Light from back and left. (light)

b. Not too near an open window. (ventilation)

c. Not too near radiator. (heat)

d. Adjustable seats are best.

Seat too high causes raising of shoulders.

Seat too low causes round or stooping shoulders and curvature of lower limbs.

Use adjustable seats and adjust to needs of each pupil.

e. Larger pupils in rear seats.

f. Children defective in sight and hearing should be seated near the teacher and blackboard.

g. Remember that it is the continuing in the incorrect position which causes such troubles as nervous disorders, round shoulders, sunken chests, curvature of spine, impairment of internal organs especially the pelvic organs.

Caution. Give a great deal of physical exercise to overcome such tendencies.

II. Seat pupils with reference to each other.

1. For discipline.
2. For class exercises.

Chapter XIX. Answers in Methods for License No. 1.

575. Primary reading exercises on Hiawatha.

1. Then Iagoo, the great boaster,
2. He the marvelous story-teller,
3. He the traveler and the talker,
4. He the friend of old Nokomis,
5. Made a bow for Hiawatha;
6. From a branch of ash he made it,
7. From an oak-bough made the arrows,
8. Tipped with flint, and winged with feathers,
9. And the cord he made of deer-skin.

(a) Compose a blackboard exercise in reading of about eight lines, based upon lines 5 to 9 inclusive, of the above passage, the exercise to be suited to a 1B or a 2A grade. (10)

(b) What principles should be followed in composing reading passages for children in the grades named? (10)

(a) Iagoo made a bow.
He made it for Hiawatha.
It was made from a branch of ash.
He made the arrows from an oak-bough.
He tipped the arrows with flint.
They were also winged with feathers.
Iagoo made a cord for the bow.
He made the cord of deer-skin.

(b) Base the lesson on a suitable and interesting story.
Make the sentences progressive, so that the unity of the story is preserved.
Do not introduce too many new words into one sentence.
Repeat difficult and new words in new combinations.
Make the sentences short.

576. Lessons on phonograms.—Outline a lesson : (a) on the phonogram *ail;* (b) on the phonogram *th* (as in *thin*). Mention devices to be employed. (12)

(a) To teach the phonogram *ail.*

Teacher uses phonogram cards to review quickly f, p, b, s, r, t, m, n.

Teacher presents card with phonogram *ail;* teacher pronounces *ail*, children pronounce. Teacher writes *ail* on the blackboard, children pronounce. Teacher points to it in various places on the blackboard, children pronounce.

Teacher sounds such words as the following, children pronouncing each: p-*ail*, s-*ail*, n-*ail*, f-*ail.*

Teacher writes on board, *pail;* she covers *ail*, children sound *p;* she covers *p*, children give *ail.* Teacher shows whole word, children sound rapidly as she points and then pronounce *pail.*

Similarly, children sound and pronounce *sail*, *rail*, *fail*, etc., from the blackboard.

(b) To teach correct sound of *th* (as in *thin*).

This phonogram usually needs considerable drill with English-speaking children as well as with foreigners. Have frequent drills on lists of words containing this sound; as thin, thing, thanks, think, threw.

Let the child who has trouble with the sound come close to the teacher, and watch her as she pronounces the word.

I have found the use of a mirror helpful. After the child has watched the teacher make the sound, let him look in the mirror and watch his own mouth as he imitates her.

Tell the child to place his tongue between his teeth, and then give the sound. With the tongue in this position, he cannot say *tink* for *think*, nor *ding* for *thing.*

577. Agreement of pronoun and antecedent.—*Describe briefly, with the aid of illustrative sentences, a good method of conducting a lesson on the point that a pronoun need not be of the same case as its antecedent. (14)*

This point presents difficulty chiefly with the relative pronoun; therefore most attention should be given to it in that connection, but other pronouns may be presented.

Have written on the blackboard such sentences as the following:

(a) John has lost his book.
(b) These are the men whom you saw.
(c) Mary saw the bird whose song we heard.
(d) I know the boy who was here.
(e) This is the flower that the girl found.
(f) The story which was told by the teacher was about the Indians.

Teacher should question as follows:

Name the pronoun in (a). How is it used? What, then, is its case? Name its antecedent. What is the case of *John?*

Name the relative pronoun in (b). How is it used? What, then, is its case? Give its antecedent. What is the case of *men?*

Question in a similar manner on the pronouns that have expressed antecedents in the other sentences. Frame questions in such a way as to emphasize the fact that the case depends on the use of the pronoun, not at all on the antecedent.

To fix further the point of the lesson, the teacher may go over the sentences a second time, this time asking the question differently; for example, "Give the case of *his*, with the reason for case: give case of *whom*, with reason."

When a pronoun is used as the subject of a verb, what is its case? When a pronoun is used as a possessive modifier, what is its case? What is its case when it is used as the object of a verb? object of a preposition?

Make a sentence containing a relative pronoun (a) in the objective case; (b) in the possessive case; (c) in the nominative case.

Write a sentence containing a relative pronoun in the nominative case, whose antecedent shall be in the objective case.

Write one containing a pronoun in the possessive case, whose antecedent is in the nominative case; etc.

578. Processes before reasons in arithmetic.—"There are some processes in arithmetic which should be taught without any attempt at explanation; when the pupil is more mature, he will discover the reason of these processes."

Explain this statement and illustrate its application with reference to a specific topic in arithmetic. (15)

Certain processes in arithmetic may be learned and used with facility by children long before they are able to understand the reasons for the process. Verbal memory develops earlier than the logical powers, and children may make use of it before they are capable of following out a line of complicated reasoning, such as would be called for in giving the reasons for the various steps in many processes.

For example, the process of long division should be taught mechanically. No attempt at explanation should be made at first, but the steps should be so thoroughly learned through drill that the use of this process thereafter will be automatic. It would only confuse the child, without helping him, to introduce any reason for these steps at this stage in the work. All his attention must be concentrated on learning the process until that is mastered; its usefulness will not be in any way impaired by the fact that the explanation of the process is deferred until he is more mature.

579. Devices for rapid drill in addition.—*Describe three devices, or modes of procedure, for enabling the teacher to conduct effectively a drill in rapid addition, and state the advantages of each.*

(a) Write columns of figures on the board to be added. Let children add as the teacher points, or independently. Every addition should be verified by adding the column again in the opposite direction. Have a time limit, and increase the interest by having the pupils in each row try to excel the pupils in

the other rows by getting a greater proportion of correct answers within the time limit.

Advantages:

Calls for activity of every pupil.

Holds their interest and concentrated attention, thereby securing effective work.

Can be easily adapted to any grade.

Stimulates wholesome rivalry and the social spirit.

Is of a practical nature.

(b) In lower grades, use cards, each card to contain one of the combinations learned. Have every combination represented on at least one card, but use most frequently the hardest ones. Show the cards rapidly, the children giving results as called on. Notice what combinations are missed, and who misses them, and go back to them later.

Advantages:

1. Calls for activity of every pupil.
2. Holds their interest and attention.
3. Is *thorough*, since every combination is presented.
4. Helps the teacher to discover what combinations need most drill.
5. Helps the teacher to discover what pupils are weak in the work.

(c) Draw a circle on the board, and about its circumference write the numbers to be used in the drill. Place another number at the center. Teacher points to the numbers to be added, the children making the combinations mentally only, until teacher calls for final result. In lower grades, point to only two or three figures successively; in higher grades, the children may be required to make many additions before final result is announced.

Advantages:

1. The children always enjoy this drill.
2. Calls for concentration and quick thinking.
3. May be easily adapted to needs of class.

580. Causal series in geography.—*(a) What is meant by "the method of causal series" in geography? Illustrate its application to the study of India. (b) Describe briefly another method of dealing with such a topic in geography.*

(a) In studying geography by the method of causal series, the topics are taken up in such an order as to bring out and emphasize cause and effect. For example, the study of climate would follow the study of position and relief, as depending on them; products would naturally follow position and climate; industries would be taught as depending on products, position and relief; and so on.

In studying India, the following outline illustrates the application of this method:

1. Position.
   (1) Absolute.
   (2) Relative. (Notice neighboring bodies of land and water).
2. Relief and drainage.
3. Climate and rainfall.
   (1) As influenced by latitude.
   (2) " " " surrounding water.
   (3) " " " monsoon winds.
   (4) " " " mountains and plateaus.
4. Products; dependent on natural resources and climate.
5. Industries; dependent on what causes?
6. People. The climate largely accounts for the character of the people.
7. Cities. The cities are located where there are harbors and where routes of trade naturally fall. Account for the location and importance of Calcutta, Bombay, Madras, Delhi, Benares.

(b) Another method.

Teach effects first. For example: by descriptions, pictures, maps, etc., the children see India as it is; its people, their centers of population, their customs, religion and industries,

and their position in the world. Then lead them from this study to seek for the causes of this present condition.

Whatever method is used, the relation of cause and effect should always be traced.

581. Type-study in history.— *What are the advantages, and what are the limitations, of the method of type-study in history? Illustrate by reference to a topic in American colonial history.*

Advantages: (a) It would be impossible for us to take time to study in detail each separate character of history with which we need to be acquainted; or to study carefully each event of history in all its circumstances. By making a detailed study of a character or event which is typical, and then associating with it the other characters or events which resemble it, the needed information is gained with a great saving of time and effort.

(b) "The type," says McMurry, "is a combination of the particular and the general, containing both the graphic elements of the concrete as well as the striking features of the general notion." From study of the type, the general notion is reached easily and quickly. One well-taught, well-chosen type is worth a great deal as a basis of comparison and a center for related knowledge. Ideas gained by the type method in history are clearer, better defined, and more ready for use in practical thinking than those gained otherwise.

(c) By this method, a lesson unity is preserved. The general notion is reached inductively, and is ready for application, in estimating other characters or events. In all later history work, the general notion reached through the type is ready for instant application.

Limitations: (a) A broad knowledge of history and excellent judgment are needed to enable a teacher to select proper topics as types. It is very important that the types be well-chosen.

(b) Some topics of history must from their peculiar nature be studied in detail separately, and do not admit of a close

following of the method of type study, especially before one has an outlook on world-history.

(c) It is necessary, after the general notion is reached, to point out differences and distinctions, in order that the idea of the individuals shall be true.

Illustration: In the study of colonial history, the colonial patriot of the period immediately preceding the Revolution may best be taught by a careful study of such a man as Samuel Adams. In this man we have, perhaps, the best illustration of the New England character as it existed in the patriots of that critical time. Much enthusiasm may be aroused by the skillful teacher in this character study, which may be easily carried over in a later lesson to such men as Warren, James Otis, Patrick Henry and Hancock. When the children begin to appreciate the character of Samuel Adams, they will understand how he felt and thought, and why he took the stand he did; and can very readily interpret the lives of the other patriots of that time.

The teacher must make a careful study of all these characters to enable her to decide which to select for the type, and what to emphasize.

It is not sufficient to have reached the general notion; not only must resemblances be noticed but the children should make distinctions and additions; e. g., Adams was a typical New England patriot, Patrick Henry a Virginian; Warren's services, though distinguished, were ended by his death at Bunker Hill; the close of Otis's life was peculiar and tragic.

582. **Nature study lesson on the spider.**—*Enumerate the points which should be treated in a nature-study lesson on the spider. (4 A Grade).*

Points to be treated in a lesson on the spider for 4 A grade:

1. Appearance: color, size, head, body, legs, eyes.
2. What it can do, and how it lives; the web; its food, the egg-cases.
3. Comparison of spider with insects previously studied.

Chapter XX. Answers in History and Principles of Education for License No. 1.

583. Aims in distributing questions among pupils.—*(a) What aims should a teacher keep in view in distributing questions among the pupils? (8) (b) Give two practical suggestions for securing proper distribution of questions in a class recitation in geography. (6)*

(a) To give each child an opportunity to recite.

To hold active attention of each child by propounding question to entire class, then calling on an individual to answer; also to hold attention by calling on a child when his attention begins to wander.

To test and help pupils by allowing them to recite on points in which previous recitations have showed them weak.

To increase the interest and confidence of dull, timid and backward pupils by calling on them for answers they can easily give, thus making them feel they have a part and responsibility in every recitation.

(b) Have in mind a regular order for calling on pupils, e. g., it might be from left to right in alternate rows. Keep this scheme in mind and call on the pupils in that order, deviating from it every now and then so that pupils shall not detect the order, and also when it is desirable to call on a particular pupil who individually needs it at that time. Unless a teacher has in mind such a regular order for calling on pupils, she is very likely to be unfair in distributing questions.

At the close of the recitation in geography, a few seconds will suffice for the teacher to check in her class book such pupils as have shown in the present recitation that they will need special attention in the next recitation in that subject. In some cases a note may be made of the question or topic to

be given such pupil. In preparing the next lesson in geography, the teacher may refresh her memory by reference to her class book, plan her review of the previous lesson accordingly, and distribute her questions with reference to these needs of individuals.

584. Causes of lack of interest in reading lesson.—*State causes, of three distinct kinds, for a weakening or failing interest of the pupils in a reading lesson* (*6*), *and give practical suggestions for reviving such interest.* (*6*)

(a) Lack of interest and appreciation on the part of the teacher.

(b) Fatigue, caused by too long a recitation, monotony, etc.

(c) Lack of suitability of the selection read.

(a) The teacher should study the piece of literature until she does appreciate and love it. If the lesson is in the lower grades, where the work is more mechanical, there should be deep interest on the part of the teacher in that work. She must cultivate an interest and then use will-power to exhibit that interest even when she is tired.

(b) Shorten the recitation period. Introduce variety into the method of conducting it. Precede the recitation by brief physical exercises.

(c) Select matter suitable to the grade in technical difficulty and in thought. It must be neither too difficult nor too easy. A boy loses his self-respect and his interest in reading if he is required to read matter that seems childish to him. Select matter related to the interests of the child.

585. Principles justifying certain processes in teaching.—*What principles of teaching may be cited to justify;* (*a*) *frequent use of the blackboard in elementary science work;* (*b*) *reading by sight method before beginning study of phonics;* (*c*) *correlating geography with history;* (*d*) *teaching definitions* (*in grammar*) *after inspection of illustrative sentences.* (*12*)

(a) The mind must gain through the senses its knowledge of everything external to itself.

Graphic methods strengthen impressions and make knowledge clearer.

Such a method stimulates interest and attention, and knowledge cannot be gained without interest and attention on the part of the learner.

(b) Proceed from the known to the related unknown.

Proceed from the whole to its parts.

Begin at the child's standpoint.

(c) Logical associations aid memory.

Correlation aids apperception.

Geography makes history, and must be correlated with it in order to understand history.

(d) Proceed from the concrete to the abstract.

Proceed from the particular to the general.

Never tell a child what he can find out for himself.

Definitions and principles should be taught inductively.

586. Three principles underlying habit.—*State three principles underlying the ready formation of habits, and show how to apply these principles in aiding a pupil to eradicate a bad habit. Illustrate.* (*14*)

Principles:

(1) There must be a strong underlying motive.

(2) Frequent, regular repetition is necessary for the ready formation of a habit.

(3) Youth is the time of greatest plasticity and the forming of habits is easiest then.

Suppose a pupil has a bad habit of incorrect posture in standing and sitting. The teacher should first of all supply a strong motive for the pupil's exertion of will-power. She must make sure that he understands wherein his posture is wrong, and how to set about correcting it. Tell him what the bad results will be if he maintains this position. This must be done very tactfully as a child is sensitive on such points. If the teacher has a real, sympathetic interest in the matter, the pupil will feel it and there will be no misunderstanding.

Make the motive stronger by setting him a good example in your own correct posture and by placing him in proximity to pupils who hold themselves correctly. Above all else, commend him for improvement. No real progress can be made without the child's own effort of will, and to secure this there must be a motive given him.

Pay particular attention to the posture of this pupil in physical exercises, as well as all through the day. Without making him conspicious by open reproof, the teacher should remind him of the habit he is trying to break up, many times during the day, by a look, a touch, or a word, and so secure frequent and regular effort.

Let the child understand that if he desires to stand and sit correctly, now is the time to form the habit. If it is difficult now, it will be more so as he grows older.

587. Synonyms.—*Discriminate, and illustrate:* (*a*) *instinct and reason;* (*b*) *a type, and a class concept.* (*12*)

(a) Instinct has been defined as a race-habit. It is a tendency to act in a certain way without a definite idea of the end to be reached. James calls instincts "native impulses". The instinct of physical activity is exhibited by an infant when he throws his arms and legs about, and by an older child in his love for games that afford physical activity.

Reason is the power of the mind that enables us to reach conclusions by comparison of judgments. Instincts are strong in childhood, but reason is at its best when we are more mature. Instincts are "native;" reason is based on observation and experience. A child who sees a whale may reason that it is a fish; his reasoning is faulty on account of lack of observation. Instinct might lead a child in school to shout, and run noisily around the room; but reason based on observation and experience, teaches him it will be better not to do so.

(b) A type is a key to related areas of knowledge. It is one topic selected for careful study because it represents or illustrates so many of the ideas to be taught about a number of topics as to be typical of the class. A type is concrete.

Minneapolis is a good type of a flour and lumber center; the Colorado river is a good type of the canon-forming rivers.

A class concept is an idea or general notion corresponding to the name of a class of things. It is abstract. It contains only those qualities common to all the individuals of the class.

The general notion *city* is a class concept. It contains only the qualities common to all cities, such as being a center of population, with a kind of local government, etc. The individual characteristics of the exact size, special industries, particular location, etc., do not enter into it.

588. Plato, Comenius, Jacotot, Spencer, Rousseau, Milton.— [*Answer only two of the following five points.*] *State the views* (*a*) *of Plato on music in an educational scheme;* (*b*) *of Comenius or Jacotot, on the proper method of teaching a language;* (*c*) *of Spencer, on the place in education of the study of literature and art;* (*d*) *of Rousseau, as to discipline;* (*e*) *of Milton, as to the proper scope of education.* (*16*)

(b) Jacotot was a French educator of the early part of the 19th century. His method of teaching a language was largely based on his maxim "All is in all." He used Fenelon's Telemachus as the text-book. This was memorized by his pupils, and so thoroughly mastered that all the pupils needed to know of grammar, rhetoric, etc., was based on this one piece of literature. In fact, he believed that all knowledge of philosophy, history and mathematics could be taught by using the Telemachus as a center, thus emphasizing the principle of correlation. Repetition was another principle of his method. His maxim or paradox "One can teach a language not known to him" was based on his own success in teaching Dutch children the French language, they being entirely unacquainted with that language and he having no knowledge of the Dutch, by using the Telemachus as above described.

(d) Rousseau, a French educator of the 18th century, believed in the discipline of natural consequences. That is, he believed that the best way to discipline a child and teach him

the difference between right and wrong, was to let him suffer the natural consequences of his wrong-doing as punishment. For example, when Emile broke a window, he was compelled to stay in the room and suffer from cold; when he did not perform his tasks, he was obliged to forego the food that would have been secured through the performance of his tasks. These punishments were to appear to Emile as the natural and unavoidable result of his own wrong act.

589. Scholasticism.—*What is the meaning and the significance of this term in educational history?*

Scholasticism is the name given to an educational movement which sought to reconcile pagan philosophy and the Christian religion. It extended from the 9th to the 15th centuries, reaching its climax from the 11th to the 13th centuries. The schoolmen or scholastics were monks, and so scholasticism is a development or a result from the whole institution called monasticism. The method of teaching employed in scholasticism was first the lecture method supplemented by explanation, and later the deductive logic of Aristotle. The form of this deductive logic was the syllogism. For illustration of the syllogism see 536. The most prominent of the school men were Abelard at Paris, Duns Scotus, and Thomas Aquinas.

590. Jesuits, Froebel, Spencer.—*Give one proposal or practice concerning the subjects of study, and one concerning methods of teaching advanced by the Jesuits; by Froebel; by Spencer.*

The Jesuits selected subjects that would develop the receptive and reproductive powers. Interest was secured by means of emulation. Methods were used to attract the higher classes.

Froebel selected subjects familiar at first and interesting to the child—those associated with the child's life. Froebel sought through the natural activities of the child to develop and train the child's faculties.

Spencer was a realist and believed that through the study of "Science" all good was to be accomplished. The method was that of observation and experiment.

591. Double translation.—*Explain and illustrate.*

Double translation is the process of translating a foreign language into one's native language, and then after a lapse of time translating back again into the foreign language. Thus Sturm used the method in teaching Latin and Greek in the 16th century and Ascham is said to have used a similar method in teaching Latin to Queen Elizabeth.

592. Power of observation.—*Explain what is meant by the "power of observation." How far does the development of this power in one direction involve its development in other directions?*

To observe is to look at a thing closely, to take note of its several parts. Power of observation means ability to look at a thing closely and to take note of its several parts while thus looking closely. A trained observer looks at two pine trees closely. If he has had training in observing pine trees he immediately can tell by reason of shape, grace, color, bark and other special characteristics what variety he observes or if the variety is unknown to him that it differs from known varieties.

A training in observation along certain lines tends to make observation along new lines easier. Observation is really habit of noticing characteristics of objects. If habit is formed in observation of certain things, while characteristics may differ, the habit remains when totally new objects are presented for consideration. Observation in new lines will not be so easy as the mind is not prepared to know just what to look for, but the power to look carefully has become a habit and will be of great service.

593. Music in Greek education.—*What did music include in Greek education?*

Music was a comprehensive word relating to both matter and method. It included poetry, the drama, history, oratory, the sciences, music in the limited sense and all other activities presided over by the nine Muses. After memorizing Homeric poems the boy chanted them to the accompaniment of

the lyre. Hence music included the processes of developing creative power,—power of expression, of initiative and of appreciation.—From p. 34, Epitome.

Music included all educative efforts presided over by the nine muses, as follows: Clio, the muse of history; Euterpe, of lyric poetry; Thalia, of comedy; Melpomene, of tragedy; Terpsichore, of choral dance; Erato, of amatory poetry; Polyhymnia, of rhetoric and eloquence; Urania, of astronomy; Calliope, of epic poetry.—From p. 58, Epitome.

594. Herbart's doctrine of interest.—*What is this doctrine?*

To be interested in a thing is to be in love with it. This kind of feeling develops into *desire*, and desire into *will*. Instead of considering learning as an aim and interest a means, Herbart would make learning develop an interest that would last till the end of life. This kind of interest is called "direct interest" in opposition to "indirect interest" which pursues an object, not for its own sake but for some intellectual or material advantage. "The more the indirect interest predominates," says Herbart, "the more it leads to one-sidedness if not egotism." The one-sided individual approaches egotism even if he himself does not notice it; for he relates everything to the narrow circle for which he lives and thinks.

Herbart would develop many-sided interest, which means balanced development of all the powers of man.

595. According to nature.—*Explain meaning.*

The expression according to nature has had two distinct meanings in the history of education. The first meaning related to the physical nature of the outside world; the second meaning related to the nature of the child. During the latter part of the 16th century the movement called realism began to direct the attention of educators to natural objects instead of to mere words. The first concrete result of this attitude of the mind is found in the books and the course of study made by Comenius in the 17th century. Rousseau directed attention to the nature of the child as well as to external nature and

showed the necessity of making courses of study that would satisfy both views of the meaning of nature. A more extended view of the meaning of this phrase as found in Rousseau may be found on page 180 of McEvoy's Epitome.

596. Realism and naturalism.—*Explain meaning and show relation to method of teaching.*

As has been said in section 595, the latter part of the 16th century witnessed an educational movement in favor of the study of real things. For many years the study of Latin and Greek was the chief means of education. Rabelais and others objected to the study of Latin and Greek because they said that such study was a mere memory process based upon words. They directed attention to the study of natural objects and thus made the beginning of a movement known as realism in education. The movement continued during the succeeding years and it has broadened to include all forms of nature, human and otherwise. The name naturalism became associated with the movement in the 18th century. Naturalism implies subject-matter and methods of teaching in accordance with the requirements of human nature and external physical nature.

597. Indirect instruction.—*Define and show its importance as a method of instruction.*

Indirect instruction has reference to all that instruction received by the pupil while the teacher has some specific aim which she emphasizes as the point of the lesson. While teaching a lesson in nature study, for instance, the specific aim may be to show how roots absorb food and moisture from the earth. The direct instruction pertains to this aim. It is clear that the pupils will acquire much related information during the period, i. e., they will get much indirect instruction. It may be said that all of the influence of the teacher's personality during the period may be classed as indirect education or instruction.

This idea of indirect instruction was emphasized by Fenelon in France during the 17th century. It was applied especially in the education of girls. His first efforts in this method of teaching were made during the period he was teaching the Duke of Burgundy, grandson of Louis XIV. Fenelon wrote three books in a fascinating style so that his pupil might get instruction in all the virtues while studying literature and history.

598. Seven Liberal Arts.—This name was given to the course of study formulated by the monks. At the beginning of the fourth century, A. D., the course of study had become generally fixed so as to include grammar, rhetoric, dialectic, arithmetic, geometry, music and astronomy. These subjects under new applications later became the Seven Liberal Arts. The name trivium and quadrivium was given about the end of the fourth century.

Trivium { grammar, rhetoric, logic }

Quadrivium { arithmetic, geometry, music, astronomy }

—Pp. 70 and 86, Epitome.

599. Emile's Studies.—*Outline Rousseau's scheme of education for Emile.*

1. From 1 to 5 years of age.
   a. Father the natural teacher, mother the natural nurse.
   b. Physical training free from customary restraints.
   c. Excessive praise of sports, games, etc.
   d. Little attention to intellect and morals.
2. From 5 to 12.
   a. Negative education.
   b. Natural punishment.
   c. No intellectual training.

d. A natural training of senses through observing all his environment.

e. "He measures, weighs, counts, compares, draws conclusions, tests inferences, discovers the principles."

3. From 12 to 15. Period for the acquisition of knowledge.
   a. Curiosity is the sole motive and the sole guide.
   b. Robinson Crusoe, the text-book of life, according to nature.
   c. Emile learns a trade to show that he overcomes the prejudice against it. Manual training considered important.
4. From 15 to 20. Period for training the heart.
   a. Educated for life and social relationships.
   b. Love for others, the great motive.
   c. Importance of adolescence in education.
   d. Strictly moral and religious education. Name of God never heard before.—From p. 186, Epitome.

600. Complete living.—*Discuss Spencer's definition of education.*

"Education is a preparation for complete living. The knowledge that is of most worth is that which most effectively promotes complete living." The activities, which constitute human life, may be classified in the order of their importance: (1) Direct self-preservation; (2) indirect self-preservation; (3) the rearing of children; (4) social demands and citizenship; (5) miscellaneous activities filling the leisure part of life.

In considering education as a preparation for rational living we have a broad conception that is generally accepted. Whatever special purposes we may have in view, they cannot be attained without the use of reason. The difficulty in the discussion is to decide what purposes or ends shall be con-

sidered worthy of realization. The term complete living should include these; and Spencer has given a classification which seems to him to be acceptable. But what is the true ideal under each of his headings? Will France, Germany, England, and the United States agree upon a true ideal? Can it be truly said that even in this country we have an ideal which will satisfy the general needs of all our people?

INDEX.

The figures refer to pages. For complete reference on any topic, look for same topic under each of the chapter headings, viz.: Arithmetic, Composition, General Method, etc.

PAGE

A

Abstraction 389
Action, reflex, etc. 389
According to nature 324, 433
Activity
  mobile children 317
  see self-activity 13, 369
Adolescence 51
Adjustment of seats 416
Agreement
  pronoun and antecedent 419
Aim
  distributing questions 426
  nature study 390
  penmanship 332
Algebra and percentage 371
Analogy 383
Analysis
  percentage 370–371
  unitary 402
Apperception 308
Arithmetic 217
  addition 231
  addition and multiplication 217
  additive subtraction 267
  aim of primary arithmetic 225
  algebra used 261
  analysis 220
  association 267
  casting out nines 270
  combinations 217
  commutation 267
  concept of number 225
  concrete operations, kinds 227
  constructive exercises 219
  counting and measuring 225
  decimal multiplication 254
  decimal division 255

PAGE

decimal types 255
decimation 229, 267
decomposition 267
definition of number 225
denominate numbers 256
difficulties graded 220
distribution 267
division 239
divisors 244
divisibility, tests of 261
drill, devices for 228
elimination of matter 268
faulty arrangement 249
fractions
  common 245
  decimals 251
  type examples 251
graphic methods 242
Grube method 241
Maxwell quoted 392
multiples 242
multiplication 237
New York view 217
percentage 256
  by equation 258
  decimal method 256
  fractional method 257
  types in 259
ratio 263
rote work 220
short processes 261
simple interest 263
Speer method 241
spiral method 241
subtraction 234
subtraction and division 219
suggestions 217
syllogism 260

PAGE

traduction 271
unitary analysis 266
variable unit 266
Arts, Seven Liberal 435
Assignment of lessons 379
Association of ideas 300
Attention
and interest 309
discussed 305
questioning 372
ten rules 301
Attribute complement 77

B

Battle of Saratoga 377
Butler quoted 4

C

Chambered Nautilus 345
Civics, chapter on 206
Chicago as type 407
Circle of thought 384
Clearness in education 316
Climate
Arctic 394
and animal life 394
Comenius 430
Comparison of animals 353
Complete living 436–437
Composition 102
abstract 105
criticised
criticism 110
dictation 104
elaboration 105
forms of expression 105
general aims 102
kinds 103
Maxwell quoted 103
method of teaching 347
model for writing 107
model imitated 108
model in criticism 109
model studied 108
model omitted 109
motives 102
oral 103

PAGE

outlines 109
paraphrase 105
principles 103
problems 106
questions answered 112
reproduction 105
subjects, selection of 106
suggestions 110
structural errors 111
written 104
Concept 317
Concert recitation 327–328
Concrete methods 333
Consciousness 304
Consecutive questioning 372
Corporal punishment 381
Correlation 308, 333
Connotation of terms 388
Control of feelings 413
Culture epochs 327
Culture, formal 385
Curriculum 4
Butler quoted 4
concentration 10
contrast 5
co-ordination 10
correlation 7–8
former courses 5
principles 4
culture epoch theory 6

D

Debates, value of 353
Decimals, multiplication 403
Deduction 332
Desks, adjustment 416
Development in reading 345
Devices in management 51
Dictation, faulty and good 349
Difficulty
English to foreigners 401
reading 339
Discipline of consequences 367
Discovery vs. telling 337
Dishonesty 411–413
Doctrine of interest
Herbart 433

PAGE

Double translation....432
Drawing
correlated....380
group....381
Drill
discussed....354
in observation....392

E

Economy of expression....341
Education
clearness in....316
Hinsdale quoted....365
ideals....366
Jacotot quoted....364
principles of....336
Walker quoted....364
Elimination in arithmetic....268
Emile's studies....435–436
Emulation....382
Enrichment of curriculum....6
Erie Canal, outline....357
Evils....360
Examination department....300
Exercises
Hiawatha....418
reading before book....397
Extension of terms

F

Faculties
training by subjects....319
Fatigue....51, 383, 414
Faults
assigning lessons....379
questions....373
Feelings, control of....413–414
Formal discipline....385
Formal steps....70, 73
Formula in percentage....371
Fortify, meaning....345
Fractions....403–404
Froebel....431

G

Games for first year....409–411

PAGE

General Method....70
aim....71
apperception....71
application....72
comparison....72
device, method, general method....70
Dr. Hervey quoted....73
generalization....72
illustration in reading....74
method-whole....80
order of mind....70
preparation....71
presentation....72
Thanatopsis....74
General notion....308, 315, 335
Geography....154
aids....176
analytic method....163
causal relations....169
causal series....169
climate....184
comparison....173
concentric circles....168
constructive imagination....162
distances....161
descriptive....166
ethical purposes....158
excursions....164
fundamental facts....160
glaciers....189
Heeter quoted....170
home geography....160
intellectual purposes....157
international date line....196
isotherms....193
latitude and longitude....194
map, how to study....161, 201
man and nature....170
Maxwell quoted....177
McMurry quoted....165
models....162
moisture....186
new view....154
New York City view....155
observational geography....166
early lessons....160

PAGE

outlines 176
Parker quoted 159
pictures 176
plan of study 1907 174
practical purposes 156
points of compass 160
rain 187
rational geography 165
representative geography 165
shape of earth, proofs 181
Standard time 196
synthetic method 163
text, how to study 203
trade winds 199
volcanoes 197
winds 199
zone 192

Grammar 116
adjective clauses, drill on 142
concord of pronoun and antecedent 143
connectives explained 147
connectives illustrated 150
development: words, phrases, clauses 141
diagrams 120
drill, kinds of 120
facts before conclusion 117
false syntax exercises 151
habit of thinking 117
infinitives
as adjectives 140
as adverbs 140
as nouns 140
uses 139
without to 141
modes 130
noun clauses developed 144
noun clauses, drill 146
oral analysis 120
parsing 122
participles
and infinitives 132
as adjective 137
as mere adjective 138
as noun 138
as mere noun 139

PAGE

distinguished 135
lesson on 133
uses 135
parts of speech, lesson on 124
personal and relative pronouns 128
predicate adjective and adverb distinguished 126
types 124
value 116
Greek music 432–433
Group drawing 381
Group teaching 376
Growth of Union 406

H

Habit 428–429
Herbart, interest 433
Hervey quoted 73
History and Civics 206
aim 208
arousing interest 214
biography 214
cause and effect 214
collateral reading 209
correlation 210
current events 206
dramatization 215
excursions 209
geography used 206
government by people 207
growth of Union 406
historical sense 208
ideas in 405
illustrations 209
institutional study 215
local government 215
local ordinances 207
members of society 207
memorizing 211
mental results 216
note books 213
open text-book recitation 210
early work 206
outlines by pupils 213
chronology 214

PAGE

prints and pictures 209
process of legislation 215
progress maps 214
questions by pupils 212
reviews 210
Saratoga, Battle of 377
source method 213
text-book method 208
topical method 211
type studies 424
use of menmonics 212
use of outlines 214
value 208
verbal repetition 211
Hiawatha 418
Hinsdale on education 365
Home study 322
Homonyms 350
Hudson River, outline 358

I

Ideas in history 405–407
Ideals in education 366
Image 317
Imagination 310
Imbecile, moral 414–416
Imitation 389
Indirect instruction 434–435
Individual notions 315, 335
Induction 324, 332
Incentives, artificial 414–416
Inhibition 387
Intellect, stages 314
Interest
Herbart's 433
lack of 427
many-sided 318

J

Jacotot 364
James, balky will 306
Jesuits 431

L

Learning defined 331
Lesson
Arctic life 394
assignment 379

PAGE

Hiawatha 418
latitude 394
phonograms 419
synonyms 429–430

M

McCloskey method 277
Many-sided interest 318
Marking papers 321
Maxwell
composition 103
course of study 5
estimating teachers 27
geography 177
grammar 122, 392
Meaning of words 324, 345, 351, 399
Memory
defined 13
discussed 311
logical 308
serviceable 363
Methods
conversational 56, 378
in mind training 14
intercorrection 374
interrupting answer 375
lecture 57, 378
looking at pupil 374
pupils make problems 374
question 57, 378
question before name 374
repeating question 375
rotation questioning 372, 375
using objects in review 374
writing as a penalty 375
Methods of teaching 56
analytic 68
classification 56
concrete to abstract 63
conversational 56, 378
deductive 67
definition 56
development 56
empirical to rational 64
heuristic 65
inductive 67
inductive-deductive 67

PAGE

known to unknown 63
lecture 57,378
observation before reasoning 64
particular to general 62
Prussian 66
questioning 57, 378
simple to complex 62
Socratic 57
synthetic 68
text-book 69
topical 68
Mind wandering 308
Misspelling 352

N

Naturalism 434
Nature study
aims 390
defects 390
on spider 425
New York State
topical outline 359
Note books 384

O

Observation 432
cultivation 30
defined 13
drill 392
Outline
Erie Canal 357
Hudson River 358
New York State 359

P

Particular notion 315, 335
Pedagogics, meaning 4
Penalty, writing 393
Penmanship, aims 332
Percentage
algebra 371
analysis 371
formula 371
Phonograms 419
Plenum vacuum 414–416
Point of fatigue 414–416
Power of observation 432
Primary reading

PAGE

Hiawatha 418
Principles
education 336
habit 332
teaching 427–428
Processes before reasoning 421
Progressive difficulties illustrated 264
Promotion, principles of 408
Pronunciation of shrimp 340
Psychology, definitions in 11
attention 12
apperception 12
concept 13
conception 13
consciousness 11
definitions 11
faculties 11
feeling 11
habit 13
imagination 13
interest 12
judgment 13
knowing 11
memory 13
mind 11
observation 13
reasoning 13
self-activity 13
sensation 12
sense-perception 12
will 11
willing 11
will
training of 16
characteristics of weak 17
characteristics of stubborn 17
characteristics of strong 18
causes of weak 18
causes of strong 19
cultivation of 19–20
Punishment
defined 48, 381
discussed 381
kinds 48, 381
natural 324

PAGE

Q

Questioning....62, 372, 373, 374, 375

R

Reading 272
accent and emphasis..... 285
adaptation..... 299
analytic method..... 273
arousing interest 283
articulation..... 285
biography 297
breath control..... 289
characteristics of books..... 272
combination method..... 275
complete works 283
correlation 299
critical reading..... 284
dramatization..... 275
extensive reading..... 290
guiding principle today..... 280
habit 299
home reading..... 290
inflection 286
intensive reading 290
literature and character..... 291
McCloskey method..... 277
memory gems 291
memorizing a selection..... 297
mental difficulties 282
modulation 287
patriotic selections..... 296
pauses..... 289
physical difficulties..... 282
pitch..... 287
principles 273
quality..... 287
quantity 287
Rational or Ward method..... 278
reading defined..... 281
reading to pupils 282
rhetorical exercises..... 298
silent reading..... 285
suggestions for beginners..... 280
synthetic method..... 274
types 272
value 272
variety..... 299

PAGE

Reading, difficulties in..... 339
Realism 434
Renaissance 357
Rote recitation..... 327–328
Rousseau
Emile's studies 435–436
natural punishment..... 367

S

Scholasticism..... 431
School economy 23
decoration..... 25
grounds..... 25
heating 23
light..... 23
meaning 23
seating 25
space 23
ventilation..... 23
School Management..... 27
adolescence 51
affiliated interests 51
answers 41
Batavia plan..... 36
class teaching..... 33
contemporary civilization..... 45
co-operation of parents..... 47
devices in management..... 51
discipline..... 47
estimating a teacher..... 27
examinations 37
fatigue..... 51
grading..... 33
group teaching..... 34
home lessons..... 38
incentives..... 49
individual teaching..... 36
kinds of punishment..... 48
moral education..... 42
opening exercises..... 29
personality of teacher..... 43
principles..... 27
principle in character..... 43
principles of moral instruction..... 46
public opinion in schools..... 50
punishment defined..... 48

PAGE

qualifications of teachers 27
questioning, rules for 39
reverence 43
reviews 38
self-government 44
self-government of pupils 50
social membership 43
spirit of school 43
virtues 51
Self-activity illustrated 369
Self-realization 335
Self-reporting 378
Sensation 12, 317
Seven Liberal Arts 435
Social stimulus 384
Spelling 81
accuracy 81
classification of words 90
co-operation of pupils 98
correlation and dictation 97
defective teaching 83
difficulties in pupils 82
difficulties in subject-matter 81
grouping by comparison 99
grouping by contrast 99
learning a lesson 87
learning pronunciation 96
methods 85
oral and written 86
pronunciation of syllables 98
psychology of 81
pupils' knowledge of meaning 96
repetition 98
rules 89
suggestions to teacher 88
teaching homonyms 92
teaching homophones 91
teaching meaning of words 93
teaching synonyms 90
two trials 393
use of dictionary 96
use of lists 85
use of text-books 84

PAGE

word-building 96
variety 100
Spencer 367, 431
Study
home 322
how to study 87, 96, 108, 109 117, 161, 201, 203, 369, 379
spelling 393
Suggestion 387
Syllabication 393
Syllogism 383
Symbolism 366
Synonyms discriminated 429–430

T

Teaching defined 356
Things vs. words 380
Types
Chicago 407
history 424–425
New York City 355
value 355

U

Unitary analysis 402–403

V

Value
phonics 393
types 355
Ventilation 23, 414
Virtues 312
Visualization 386

W

Walker quoted 364
Ward method 278
Will
balky 306
defined 11
training 16–17, 307
Writing
a penalty 393
too much 391

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